DEPARTMENT OF THE INTERIOR

REPORT OF THE PROCEEDINGS

OF THE

THIRD ANNUAL CONVENTION

OF THE

WESTERN CANADA IRRIGATION ASSOCIATION

HELD AT

LETHBRIDGE, ALTA.,
AUGUST 5 AND 6
1909

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WESTERN CANADA IRRIGATION ASSOCIATION.

OFFICERS FOR 1909-10.

Hon. President—His Honour Lieut.-Governor JAMES DUNSMUIR.

President—Hon. F. J. FULTON, Victoria, B.C.

First Vice-President—J. S. DENNIS, Calgary, Alberta.

Second Vice-President—A. M. GRACE, Medicine Hat, Alberta.

Treasurer—C. HALLAMORE, Kamloops, B.C.

Executive Committee.

W. C. RICARDO, Coldstream, B.C.

R. B. BENNETT, K.C., Calgary, Alberta.

W. H. FAIRFIELD, Lethbridge, Alberta.

J. T. ROBINSON, Kamloops, B.C.

A. B. KNIGHT, Vernon, B.C.

A. E. MEIGHEN, Vernon, B.C.

C. W. PETERSON, Calgary, Alberta.

JOHN T. HALL, Medicine Hat,
Permanent Secretary.

Scene in Kamloops District, British Columbia, where the next Convention will be held.

FOREWORD.

In preparation for the Convention, official notices, which read as follows, were sent out:—

"The conventions of this Association have now become a recognized factor in the progressive development of Irrigation in Western Canada, and this, the third annual convention, promises to be the mark of a still further step along lines of advancement in the art and science of Irrigation.

"Arrangements are being made to have the recognized experts in Irrigation and allied subjects address the convention, and every opportunity will be given for the interchange of ideas and discussions thereon that will lead to their best development.

"A large number of delegates are already promised and it is hoped that every person interested in practical Irrigation will be present.

"The basis of representation at the convention as established by the Constitution is as follows:—

"The Governor General of Canada, Members of the Dominion Cabinet, The Senate and House of Commons, The Dominion Commissioner of Irrigation, and Superintendent of Forestry, The Director and Superintendent of Dominion Experimental Farms, five representatives of the Canadian Society of Engineers, two representatives from each Canadian railway and one from each agricultural paper in Canada.

"From the Provinces of Manitoba, Saskatchewan, Alberta and British Columbia.

"The Lieutenant-Governors, the members of the Legislatures, the deputy Ministers of Provincial departments, Provincial Irrigation Commissioners, three each for all Irrigation and Irrigation Colonization companies, two each for all Agricultural, Forestry and Live Stock associations, five each for all cities, appointed by the Mayor, two each for Boards of Trade or similar organizations, two each for all town, village or rural municipalities to be appointed by the Mayor, Reeve or Overseer, two each for all Canadian Clubs to be appointed by the President, the Superintendent, or representative appointed by him, for each experimental or demonstration farm, three representatives from other Irrigation associations to be appointed by their presidents.

"It is especially requested that any one having a resolution to bring before the Convention for discussion, mail a copy of the same to the Executive Committee Secretary at Lethbridge, by July 24, so that it may be printed for convenience at the Convention.

"And also that intending delegates will notify him of their intention to be present in order that the necessary accommodation may be arranged.

"The usual Convention rates will be obtained from the C.P.R. and the A.R. & I.

"Be particular to observe the following: Purchase a single fare ticket from your agent, get a standard certificate from him that you are a delegate to this Convention.

"Register and hand in your certificate to the secretary immediately on your arrival in Lethbridge and see that you get it back from him before leaving, in order to get your reduced fare home.

(Signed) J. W. McNICOL,
Secretary, Executive Board.

Lethbridge, June 9, 1909."

These were accompanied by an invitation on a separate sheet of paper, in a separate envelope, which read as follows:—

"The Western Canada Irrigation Association hereby extend to you a cordial invitation to be present at the sessions of the Third Annual Convention to be held at Lethbridge, Alberta, August 5th and 6th, 1909."

This notice and invitation were sent to every one mentioned in the "Basis of Representation," and also to persons who have canals or ditches in Alberta or Saskatchewan as shown by the Government Blue Book, "Irrigation in the Provinces of Alberta and Saskatchewan." Also to the delegates who attend the second Annual Convention at Vernon, as shown by the report of that convention, making a total of nine hundred notices and invitations sent out.

Scene in Kamloops District, B.C.

REPORT OF PROCEEDINGS OF CONVENTION.

OPENING SESSION.

The third annual convention of the Western Canada Irrigation Association, opened in Lethbridge on August 5th, 1909, at 10 a.m.

The chair was taken by Mr. J. S. Dennis, Commissioner of Irrigation for the Canadian Pacific Railway Company, and President of the Association, who immediately declared the convention open for business. The following committees were then appointed:

Credentials: Messrs. George Harcourt, R. H. Rogers, and T. Galloway.

Resolutions: Messrs. C. W. Peterson, John T. Hall, R. R. Bruce, R. H. Rogers, K. Bayntun and William Pearce.

Mr. R. B. Bennett, K.C., M.L.A., of Calgary, was elected chairman of the sessions of the convention.

PRESIDENT'S ADDRESS.

Mr. J. S. Dennis, President of the Association, then addressed the convention as follows:

I do not know that it is desirable that any address to be made by the President should be formal in character, but believe that anything the President may have to say should be in the shape of an informal talk. I have not attempted to prepare anything in the way of a formal address, but with your permission I will say a few words to you as to what I think can be done by the Western Canada Irrigation Association, the reason for the Association coming into being and what we should aim to accomplish. As you all know a movement towards the establishment of a convention of this kind was started two years ago by a meeting held at Calgary, followed last year by a very successful meeting at Vernon, B.C., and this year we have come back to the southern portion of the province of Alberta, where the first irrigation works on an extensive scale in the province of Alberta were undertaken. I suppose all of us who have given the matter any consideration now realize that the subject of irrigation, and irrigation development, is becoming a very important one for the southern portion of the province of Alberta, the western portion of the province of Saskatchewan, and in our sister-province of British Columbia. It seems proper to me that many questions connected with irrigation, questions relating to the users of water, to those constructing and operating irrigation systems and to the general public who benefit by the development resulting from irrigation, should be dealt with through a convention of this kind, where the freest possible discussion is to be had. We all know the long uphill struggle to convince people in one of the provinces named that irrigation was necessary. I speak somewhat feelingly on this subject as I may say I have devoted a considerable portion of the last twelve or fifteen years doing my part, and there are other gentlemen present also who, as we say in our western term "stayed with it."

In our sister-province to the west of us, the question of irrigation is becoming a very important one, not only in the matter of irrigation development, but in the vital question of the law as to the use of the water. There, as you know, or those of you

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who were present last year at Vernon, the principal question discussed there as interesting British Columbia, was the question of their law relating to the use of water, and you also probably know that the discussion was followed at the next session of their legislature by the enactment of a wide-reaching law which will overcome a great many of the difficulties which they have been contending with with reference to the use of water, and certainly I think that the convention can feel, that as far as the province of British Columbia is concerned, they have done a great work. In the general discussion there last year and in the forming of public opinion, I think we can all feel that we helped the Government of British Columbia very materially in passing this law, a law which has overcome the existing difficulties and has enabled irrigation development to be proceeded with.

In this province, fortunately, we are not confronted with conditions of this kind, because we have, without any question, the best law with regard to the use of water that exists. That, I think, has been proved by results, and the fact that to-day after that law has been in force for so many years we have not had a lawsuit of any kind.

Of course, here the subjects that we necessarily should consider are those more directly connected with construction of systems, use of water, &c., and in that way this convention can do a splendid work in this province.

The use of irrigation to aid agriculture is older than history, but to a large majority of people it is a new subject and it must necessarily be new to a large number who are now taking up land in this province. For our settlers we have got to look to the dry farming sections of the United States and Europe. There never has been and there never will be much influx of settlers from the irrigated regions of the United States, as the people living on the irrigated farms there are so prosperous, happy and comfortable that it is hard to induce them to give up their homes there to come up to this country and start over again, even with the inducements that this country has to offer.

In the United States there are some eight or ten million of acres of land cultivated by means of irrigation, and the Federal Government of the United States is to-day spending millions in the furtherance of irrigation schemes.

Irrigation farming is now becoming a very prominent issue in this country, and in connection therewith there is a very vast number of difficulties that must be dealt with through meetings of this kind.

I sincerely trust that while we have begun in a small way in these conventions that we may look forward to the establishing of something in the way of a permanent institution, and incidentally I might say to you, we have as a guide the wonderful work which has been done south of the line by the National Irrigation Congress. The work of this Congress began in 1893-94 in a small way. They have had an uphill fight for a long time, and yet I think there is no doubt at all that the National Irrigation Congress of the United States has done more to advance the principle of irrigation, to overcome a great many of the existing difficulties, to materially advance the subject of education on the question of faulty law in the different states, than any other organization, and it has also been responsible for the marked interest now being taken by the whole of the United States in the subject of irrigation and especially by the Federal Government, and we should look forward to this convention being the recognized medium between the people and the Governments.

I want to close by taking this occasion to convey to the convention my appreciation of the honour done me last year after I had left Vernon, of electing me President of the Association. I regret that I have been unable to give Mr. Fairfield, the Secretary, and the members of the Executive the assistance I would have liked, but I appreciate it because it was an election as President of the Association that was dealing with the work that I may, I think, confidently say has been very close to my heart for a great many years. (Cheers.)

The Secretary's report was then presented and consisted of a report of last year's convention, printed copies of which were distributed to the delegates.

The President read the following telegram from Professor L. J. Carpenter:

"Fort Collins, Colo.,
July 31, 1909.

W. H. Fairfield,
Lethbridge, Alta.

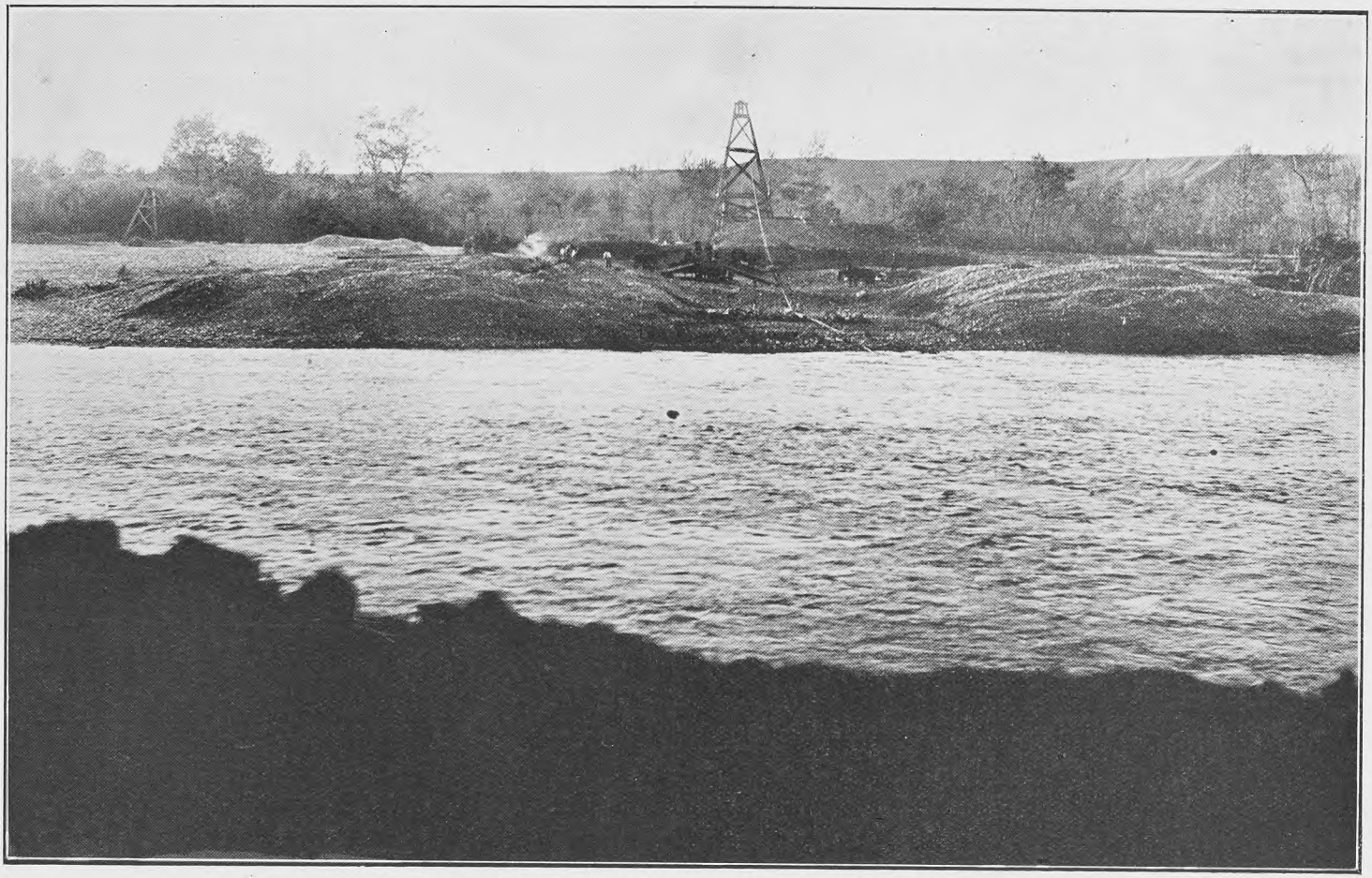
Engagement prevents leaving until after convention. Please convey to your convention my exceeding regret, my belief in your great future and cordial good will.

(Sgd.) L. J. Carpenter."

Letters and telegrams of regret were also read from the following:

The Governor General, Hon. Sir Wilfrid Laurier, Hon. Mr. Fielding, Hon. Mr. Fisher, Hon. Mr. Oliver, Hon. Mr. Brodeur, Hon. Mr. Graham, Hon. Mr. Aylesworth, Senator Harty, Mr. P. Michaud, M.P., Mr. E. W. Nesbit, M.P., Mr. M. Clark, M. P., Deputy Minister Interior, Ottawa, Lieut. Governor Bulyea, Deputy Minister Agriculture, Manitoba, Prof. Saunders, Mr. A. E. Cross, Mr. F. W. Godsal, City of Victoria, City of Nanaimo, Town of Armstrong.

The convention then adjourned till 3 p.m.



Bow River at intake of canal of Southern Alberta Land Co.

THURSDAY AFTERNOON SESSION.

The third annual Convention of the Western Canada Irrigation Association was formally opened this afternoon by the Hon. Dr. Rutherford, Premier of Alberta, Mr. R. B. Bennett, K.C., of Calgary, occupying the chair.

In his opening remarks the chairman said:

"Much against my better judgment and much against my inclination, I find myself for the third time chairman of this convention. Gentlemen you have done me an honour which I consider a labour.

"I am afraid the importance of these conventions has not been properly realized by the people of British Columbia and Alberta, their importance in the moulding of legislation, and the great benefit accruing from the free discussion of matters pertaining to the general welfare of the country.

"I do not intend to trespass further upon your time but will call upon Mayor Henderson of the City of Lethbridge to address you."

Mayor Henderson, on behalf of the citizens of Lethbridge, welcomed the delegates to the city in his usual affable manner. He said:

"I can assure you it pleases me to have any gentlemen here in the interests of irrigation, as irrigation I know has been the means of bringing our country to the front and also our city. In the early days we thought that we had only a ranching country here. We did not bother ourselves about the land, we simply said to ourselves that it was only good for ranching. We now know the great benefit we have derived from irrigation. I again welcome you to the City of Lethbridge and assure you that we will do everything in in our power to make your stay amongst us as pleasant as it is possible to do."

PREMIER RUTHERFORD.

The chairman then introduced the Hon. Dr. Rutherford, Premier of Alberta, who addressed the convention as follows:

"Mr. Chairman and Gentlemen: I take very much pleasure in extending a very hearty welcome to the delegates from other provinces of Canada and also from the United States of America, to the Province of Alberta. I appreciate very much the very kindly reference which the chairman has made to myself.

"It is quite fitting,Mr. Chairman and Mr. Mayor, that this convention should be held in the fair City of Lethbridge, the third in the province and the home of irrigation in the province of Alberta. Your city here is making splendid progress. I do not know of any other town or city in the province of Alberta that is making better progress than Lethbridge. You are located here in a splendid agricultural district; you are located here in a splendid mineral district, and there is no reason why Lethbridge should not continue to be one of the best cities in the Province of Alberta.

"I am sure I was delighted to meet quite a few delegates and visitors from the neighbouring province of British Columbia. Irrigation is playing, and is going to play, an important part in the development of the great province of British Columbia. It is going to do a great deal to make your splendid valleys more fertile. Irrigation is going to play an important part in the development of the province of Alberta. Our prairie plains will be rendered more fruitful by reason of irrigation. I am here largely to learn. I must confess that I have not taken such a deep interest in the work of irrigation companies in this province as perhaps I should. Other duties have been so pressing that I could not heretofore give that attention to the work of irrigation in this province that perhaps I should.

"I have referred to the splendid progress that the city of Lethbridge is making; the province as a whole is making magnificent progress. I quite well remember when I came to this province fourteen years ago; we had then probably a population of not more than 20,000, outside of the native Indian population. To-day we have two cities, each of which has a greater population than the whole of Alberta had fourteen years ago. The agricultural districts are growing and developing and keeping pace with the cities and towns. At the end of this year I do not think there will be many desirable homesteads left south of the Saskatchewan river. We are receiving a very desirbale class of settlers in this province. Our immigration is largely from the Homeland, from the older provinces of Canada and from the middle Western States; at least one out of four of our population is a native of the United States. These American settlers are making good in this province. They come here from states where conditions are very similar to those found in Western Canada. I am frequently asked when visiting Eastern Canada as to the loyalty of these Americans who are coming to our country. I think that the Americans are proving themselves loyal to Canada and loyal to the great Empire of which we form a part. I do not think that we should discourage in any way immigration from the United States.

"I think, in order to illustrate the rapid growth of the province of Alberta, I need only refer to the enrolment of the children in our schools. In the year 1905, the year in which we became a province, we had 23,000 children in our schools. Last year the enrolment reached over 40,000 and this year we expect to have an enrolment of 48,000 to 50,000 children in our schools. These statistics are the most reliable we have at present as to the growth of our province. I think the population of the province of Alberta is to-day 300,000; probably in three or three and one-half years our population has doubled. This, I think, is a magnificent record of our growth in population. Our agriculturists are making splendid progress. I could hardly credit the statement made to me here in the city of Lethbridge as to the number of steam ploughs at work in the Lethbridge district this year.

"Statistics reveal that 23,000,000 bushels of grain were grown in this province last year. This year the estimate reaches between 29,000,000 and 30,000,000 bushels. I think that likely that is a very conservative estimate as to the production of grain in this province this year.

"It is quite true that in a few years we will not require artificial irrigation, but it is a splendid thing for the agriculturist to know that he has the assurance that he can have a sure crop from the soil every year, as doubtless he can have through irrigation.

"My welcome to the province is extended not only to our own Canadians from other provinces but also to visitors or delegates who may be here from the United States of America. I understand that Prof. Campbell, whose work and whose addresses on soil culture in the province have contributed so much to the enjoyment of the people, is contributing a paper at this convention. One of the things that came to my notice in connection with the instruction that Prof. Campbell has been giving, came to me through one of the farmers in the constituency which I have the honour to represent, in the central part of the Province of Alberta, the city of Strathcona. This man told me that he was adopting some of the principles advocated by Prof. Campbell on his farm and was obtaining splendid results.

"It is not my intention to address you at further length. It is a great pleasure to be here with you at your third convention. I happened to be out of the province at the time you held your convention last year so was unable to be present.

"The people both of Canada and the United States are taking a deep interest now in the conservation of the natural resources of their respective countries. I am delighted to learn that the Dominion Government are taking steps in the direction of conserving our natural resources. A great deal of waste has occurred in the past, especially in connection with timber. I think it is full time that the people should take a deeper interest in this very important matter. I think this subject of conservation has something to do with irrigation in this province, and that this matter will be

of considerable interest to the irrigation people. I am quite well aware that there may be some little friction arising where irrigation companies have to do with a large number of people. We all have to stand adverse criticism of our work, no matter in what work or employment we may be engaged, but it strikes me on the whole, with the little knowledge I have, that the regulations are exceedingly fair.

"Allow me in closing to again extend a very hearty welcome to the province to the delegates from the sister provinces and from the great republic to the south of us. I thank you, Mr. Chairman, for the privilege of extending this welcome on behalf of the province of Alberta."

HON. F. J. FULTON.

The Chairman then introduced Hon. Mr. Fulton, who said:

"On behalf of the delegates from British Columbia, I desire to express our hearty appreciation of the warm and hospitable welcome so eloquently expressed by the Hon. A. C. Rutherford, Premier of the Province of Alberta, and I desire to thank him, and in doing so I but voice the sentiments of all the delegates from British Columbia for that welcome.

"I may say that this is the third time I have had the privilege of attending this convention. First at Calgary, and second at Vernon, and now here in Lethbridge."

Continuing Mr. Fulton said he was glad to note the growing interest in such meetings, and went on to speak of the inestimable value of conventions like these in drafting legislation. He then briefly gave a history of the legislation, in his province, on the question of irrigation. In the early days their system was very crude, but to-day they are laying the foundation of a plan which he (Mr. Fulton) was very enthusiastic over. What he considered is the best feature of their act is the appointment of a "Chief Water Commissioner for the Province." There is an investigation commission at work now securing reliable data with regard to the amount of water available and the amount of land capable of being irrigated. When this commission has completed its task they will hold meetings in the various districts to deal with all claims for records.

In closing Mr. Fulton said that in the passing of legislation regarding water the government of British Columbia had undoubtedly been influenced and guided to a large extent by the last two meetings of the convention.

The Chairman then introduced Mr. Auld, of Regina, who said:

"As I have not the distinction of being a minister in any Government , and not having the pleasure of being present at previous meetings of the Western Canada Irrigation Association, I cannot consider this as other than a distinct honour to the province of Saskatchewan. I may say that when the convention was first formed three years ago, I was aware of the work that was being carried on, but never until this year was I privileged to be present.

"This season when the official call came from your Secretary, the Premier wished that his Government should be represented, and in process of time I was asked to come. I may say that Saskatchewan is perhaps not as actively interested in the subject of irrigation as are the provinces to the west of her. We have, however, in the Maple Creek and Cypress Hills districts some irrigation projects that are doing good work.

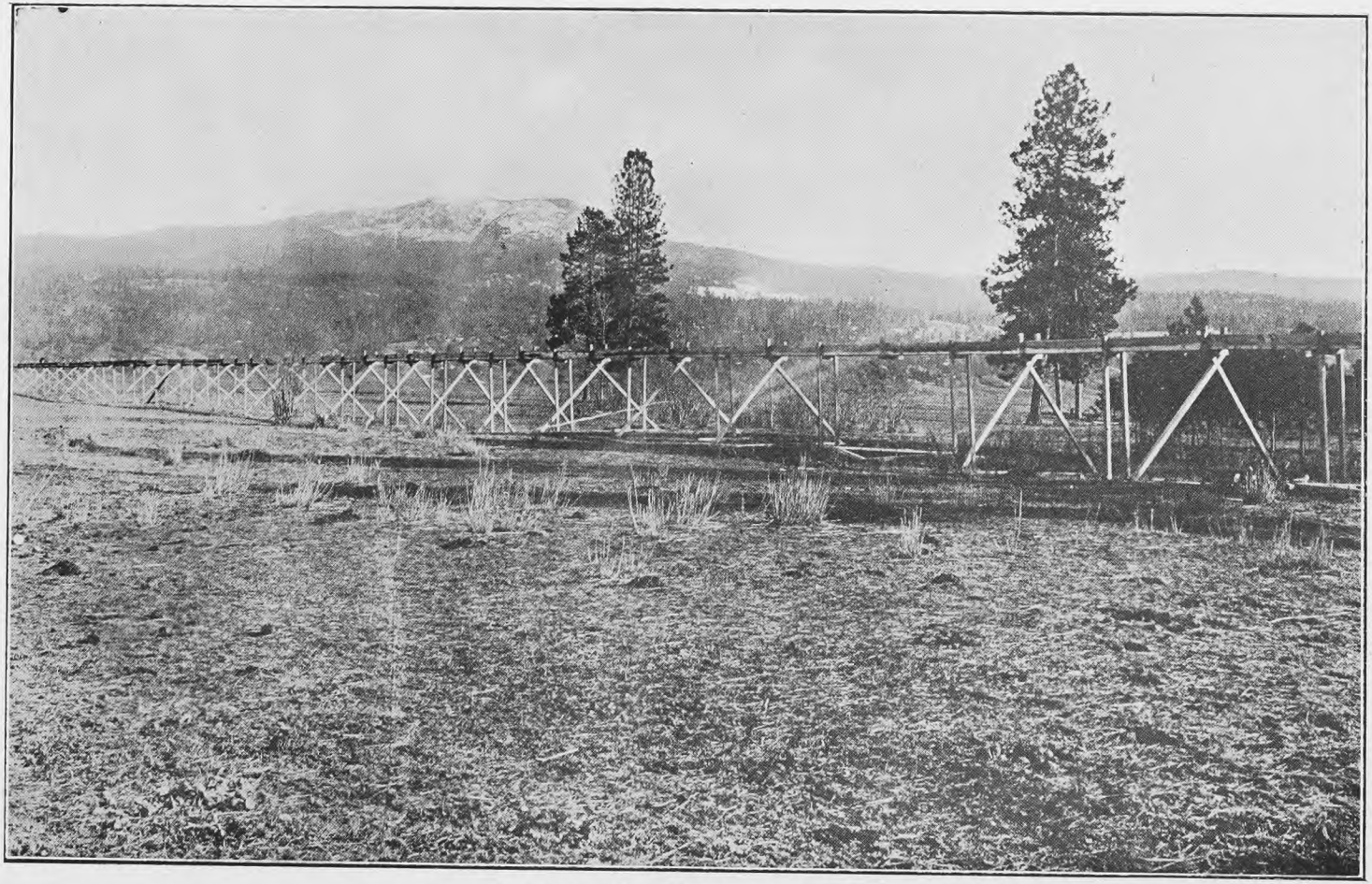
"As the Hon. Premier Rutherford was telling of the crops being grown in Alberta it occurred to me to mention what was being done in Saskatchewan. Last year the grain grown in the province of Saskatchewan amounted to 100,000,000 bushels, and this year it should reach 150,000,000 bushels. We are interested in irrigation to the extent that a lot of new settlers are coming into the south-western part of the province of Saskatchewan, and irrigation in that section of the province will soon be

a vital question. We are glad to hear and listen to the discussions and know what you are doing.

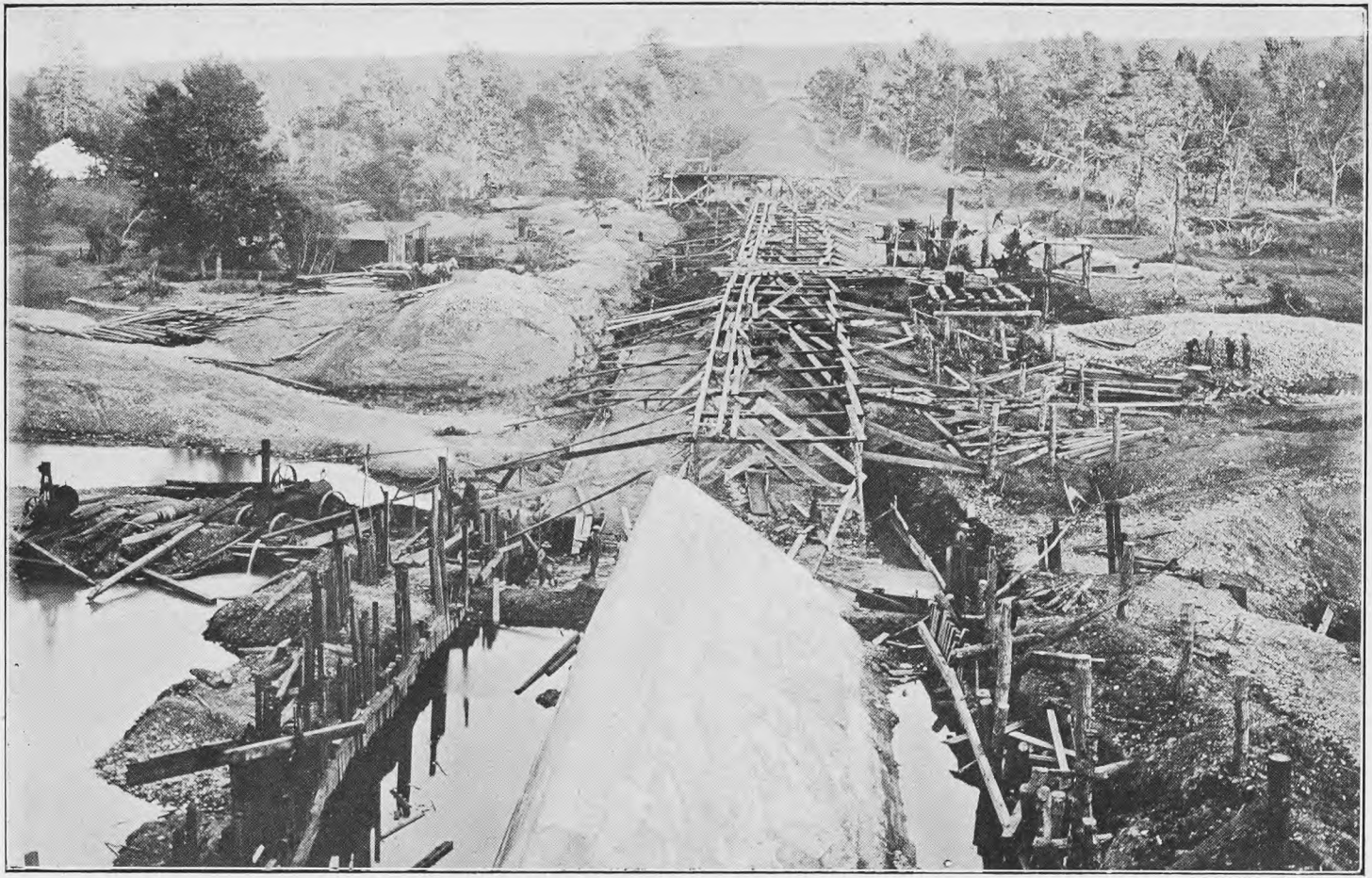
"I thank you, gentlemen, for the kind words of welcome, and know we shall enjoy ourselves while we are here."

The Credential Committee being called on to report, stated that the following delegates were duly registered:—

Auld, F. Hedley, Department of Agriculture, Regina Sask.,
Bowes, S. A., *Farmer's Advocate,* Winnipeg, Manitoba,
Bayntun, R., City of Kamloops, B.C.,
Bennett, R. B., K.C., M.L.A., Calgary, Alta.
Bruce, R. Randolph, Wilmer, B.C.
Burrows, H. G., Horticulture Society, Calgary.
Childs, R. F., Vancouver, B.C.
Campbell, Prof. H. W., Lincoln, Neb.
Conybeare, C. F. P., K.C., D.C.L., Board of Trade, Lethbridge.
Campbell, R. H., Superintendent of Forestry, Dept. of Interior, Ottawa.
Galloway, Thos., Board of Trade, Kamloops, B.C.
Dennis, J. S., C. P. R. Irrigation Co., Calgary, Alta.
Dawson, A. S., C. P. R., Irrigation Co., Calgary, Alta.
Evans, J. W., Town of Raymond.
Fison, W. B., Fruit Grower's Association, Kamloops, B.C.
Fulton, Hon. F. J., Government of British Columbia.
Fairfield, Prof. W. H., Experimental Farm, Lethbridge, Alta.
Fearon, E., Maple Creek, Sask.
Grace, A. M., Southern Alberta Land Co.
Green, Geo. W., Board of Trade, Raymond, Alta.
Harcourt, Geo., Deputy Minister of Agriculture, Edmonton, Alta.
Hargraves, W., City of Kamloops, B.C.
Huckvale, Walter, Board of Trade, Medicine Hat, Alta.
Hall, John T., Board of Trade, Medicine Hat, Alta.
Henderson, E., Municipality of Coldstream, Vernon, B.C.
Hatch, Geo. W., City of Lethbridge.
Henderson, Wm., City of Lethbridge.
Hoffner, H. J., City of Vancouver, B.C.
Hutton, G. H., Experimental Farm, Lacombe, Alta.
Hutton, W. O., Agriculture Society, Lethbridge, Alta.
Knight, E. B., White Valley Irrigation Co., Vernon, B.C.
Kerr, T. O., Coaldale, Alta.
Laycock, E., Town of Raymond, Alta.
Lane, Geo., Inter-Western Pacific Exhibition Co., Calgary, Alta.
McKillican, W. C., Government Seed Department, Calgary, Alta.
McNicol, J. W., Lethbridge, Alta.
Pearce, Wm., Board of Trade, Calgary, Alta.
Peterson, C. O., C.P.R. Colonization Co., Calgary, Alta.
Pilling, R. W., town of Cardston, Alta.
Rutherford, Hon. A. C., Premier of Alberta.
Rogers, R. H., Board of Trade, Vernon, B.C.
Rowley, C. W., Board of Trade, Calgary, Alta.
Sauder, P. M., Hydrographic Survey, Dept. Interior, Calgary, Alta.
Strong, J. C., East End, Sask.
Suggitt, H. A., Coaldale, Alta.
Tregillus, W. J., Inter-Western Pacific Exhibition Co., Calgary, Alta.
Whitney, D. J., Agriculture Society, Lethbridge, Alta.



An irrigation flume, Kamloops District, B.C.



Spill Dam of Southern Alberta Land Co.

The Resolution Committee then reported that the following nine resolutions had been carefully considered by the committee and were presented to the convention for consideration and discussion:

RESOLUTIONS.

Resolution No. 1.

Moved by C. W. Peterson, seconded by T. Galloway.

That the best interests of this convention demand the services of a permanent secretary, in order that a vigorous effort may be made during recess to promote the objects of the organization and generally to insure greater uniformity and continuity in the business of this convention, and that the said secretary, in conjunction with the executive committee, be charged with the duty of approaching the various governments and private individuals for annual grants with a view to creating a permanent revenue.

Resolution No. 2.

Moved by William Pearce, seconded by E. B. Knight.

Whereas with many owners of irrigated lands, or those on which irrigation is possible in the provinces of Alberta and British Columbia, the best soil product and the application of water thereto, is a new and untried problem.

And whereas to meet tnese conditions the United States government has instituted a system of bulletins issued at frequent intervals, giving information on the subjects specified in the foregoing paragraph.

Therefore be it resolved that the provinces of Alberta and British Columbia, through the proper departments of the same, be requested to institute and give effcet to the issuance of such bulletins, and it is suggested that a prominent feature of said bulletins be contributions and inquiries by parties giving their experiences and obtaining of information.

Resolution No. 3.

Moved by G. O. Kerr, seconded by Randolph Bruce.

Whereas owing to the prevalence of high winds and from other causes great danger exists of the spread of noxious weeds by means of irrigation canals and ditches.

And whereas the most prompt and expeditious measures are required to destroy weeds growing upon the banks of water distributing systems before such weeds shed their seed and become a danger to the whole district.

Therefore be it resolved that the governments of British Columbia and Alberta cause such amendments to be made to existing legislation dealing with noxious weeds, placing the duty of keeping all canals and distributaries clear of noxious weeds upon the company or individual responsible for the maintenance and repair of such canal or distributary.

Resolution No. 4.

Moved by W. H. Fairfield, seconded by C. W. Peterson,

That this Convention, recognizing the great need that exists for educational work in regard to irrigation, owing to the fact that the vast majority of the farmers who settle on irrigable lands in the western provinces have had no previous experience in the use of water, desire to urge upon the Saskatchewan, Alberta and British Columbia Departments of Agriculture, the importance of incorporating amongst their Institute lecture staffs, experts on irrigation farming.

RESOLUTION NO. 5.

Moved by J. S. Dennis, seconded by R. Bruce.

That the Dominion government be petitioned to cause a Forest Reservation to be made covering the entire east slope and highest foothills of the Rocky mountains, and within the railway belt of British Columbia, in order to prevent the deforestation of this area, leading to the rapid melting of the snow at the headwaters of the mountain streams, thus causing destructive floods and wasting the water required for irrigation in Southern Alberta.

RESOLUTION NO. 6.

Moved by George H. Hatch, seconded by H. A. Suggitt,

Whereas with the opening of irrigation districts in Alberta there has arisen a question as to where the responsibility belongs for keeping open the roadways by bridging, whether it should be the companies or the provincial government.

And whereas pending the settlement of this question, the farmers and travelling public in some districts are much inconvenienced, being forced to cover much unnecessary mileage in marketing their products, and in their intercourse with nearby neighbours.

Therefore be it resolved that this convention petitions the provincial government at Edmonton to urge the question to a speedy issue, and should it seem that a settlement will be long delayed, that the province undertake the work at once, advancing the cost for same until such time as the matter is finally adjusted and the responsibility for the work placed where it belongs.

RESOLUTION NO. 7.

Moved by Mr. Tregillus, seconded by C. F. P. Conybeare.

That in view of the growing importance of irrigation and the enormous investment in irrigated lands, it is the opinion of this convention that the Agricultural College of the province of Alberta should be located at a point where the necessary area of irrigable lands can be included in the college farm in order that instruction may be given students in the practice and theory of the artificial application of water to crops.

RESOLUTION NO. 8.

Moved by R. H. Rogers, seconded by E. B. Knight,

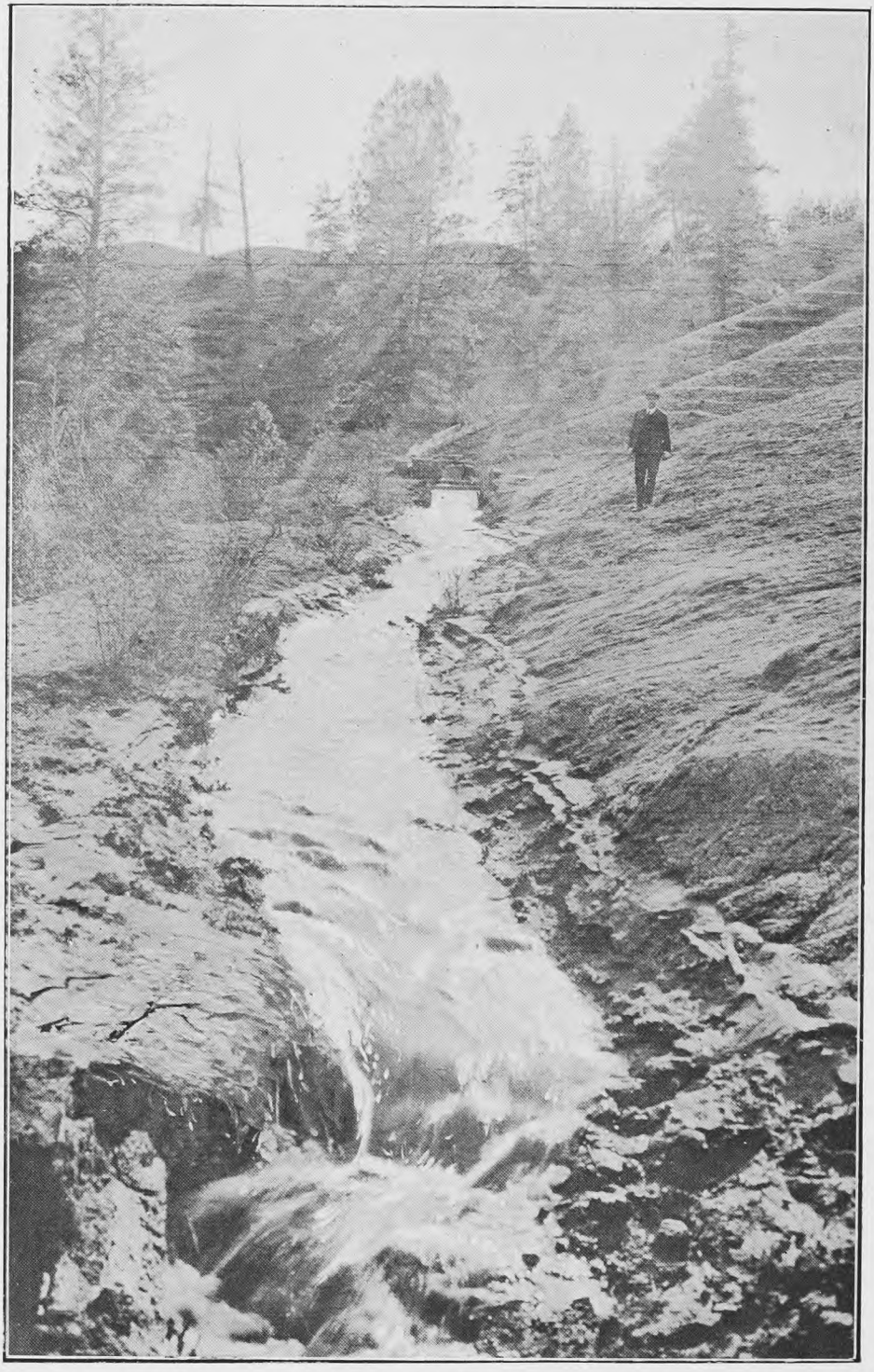
That the subject of measurement and distribution of water from small laterals be discussed.

RESOLUTION NO. 9.

Moved by Randolph Bruce, seconded by R. H. Rogers.

That in the opinion of this convention speedy steps should be taken by the government of British Columbia towards the establishment of a Provincial Agricultural College wherein practical instruction in the proper methods of applying water shall be given.

It was moved by J. S. Dennis and seconded by E. B. Knight that the resolutions be taken up and discussed in the order in which they are numbered. Carried.



A Mountain Stream.

Mr. R. H. Campbell, Dominion Superintendent of Forestry, then delivered the following address:

The Forests in Relation to the Water Supply.

It is hardly necessary to make an effort to impress the necessity for a good water supply. For domestic, sanitary, industrial, agricultural, indeed for all purposes, water is indispensable. It is the great cleanser and the greatest agent of fruitfulness. The conditions of its production are therefore a subject of interest.

While the usual method of the supply of water to the land surface is by precipitation in rain or snow, its distribution is by flow from higher to lower levels through streams or river channels, or beneath the surface, and in each of these forms the water serves some useful purpose. The water of precipation is the main dependence for agriculture over great areas. The waters of the streams are used for municipal water systems, for agriculture by irrigation and for industrial purposes. The underground waters supply wells, or issue in springs, and in the former case are used chiefly for domestic and sanitary purposes.

The precipitation necessary for successful agriculture without irrigation is not a fixed quantity and varies with circumstances. The kind of crop, the composition of soil, the distribution of the rainfall throughout the season all affect the result. In Ontario the annual precipitation varies between 30 and 40 inches per annum, and this increases as the Atlantic coast is approached, so that in Nova Scotia it reaches 42 to 56 inches. In the southern portion of Alberta and Saskatchewan the records of the meteorological survey show an annual precipitation that goes as low on an average as 7.64 inches at one station, while at another it reaches 16.19 inches. The lowest record for any complete year was 2.91 inches in Chaplin in 1893 and the highest 34.57 inches at Calgary in 1902. The greater precipitation is close to the mountains, decreasing gradually out to the open plains. Heavy rains in the fall and a good snowfall in the winter are great benefits and where these conditions are found, summer precipitation is not so great a necessity. In California, with a precipitation of only 6 inches, wheat has been grown, owing to the thorough soaking of the ground in the fall. But even where the precipitation is sufficient in all ordinary years for agricultural purposes, the artificial application of water may be of great benefit, and in humid countries irrigation is practised to some extent with the result of increasing the size and quantity of yield. That a district makes provision for a supply of water for irrigation purposes is no detriment to the district as many seem to think, but rather an evidence of foresight and enterprise.

The domestic supply for new and growing cities, towns and villages is important on economic and sanitary grounds, and if no other use for water were found, would in itself present a strong argument for studying and conserving the supply. Cities and towns such as Calgary, Lethbridge, Macleod, Medicine Hat, Maple Creek, Magrath, Stirling, Cardston, and many others must have such a supply. These places are growing steadily in population, and their number is being added to.

Railway and industrial enterprises are developing and for the energy to carry them on, resort must be had to water in the form of steam or in that of stream flow.

What Relation Have the Forests to the Water Supply and What is the Extent of Their Influence?

First, what is their influence on precipitation? In order to have precipitation the atmosphere must be over-charged with moisture. But precipitation may be induced in air which has almost reached the point of saturation by contact with some obstruction or by the lowering of the temperature. In both ways the forests may exert an influence. On high mountain slopes their obstructive effect is probably not greatly apparent, as the mountains themselves form a greater obstruction, but their cooling influence is greater than that of the bare and rocky mountain side burning in the heat of the sun, and this is found to increase with elevation. In level

country the influence of a considerable area of forest is more marked as there, its cooling and obstructive effects come into play unmingled with any other agency.

Various observations have been made in Europe in regard to the influence of forests on rainfall, some of them conclusive, some of them leaving the matter much in doubt. One of the most striking series of observations that seemed to prove conclusively the influence of the forests on rainfall was that made at Lintzel, in Germany, some years ago. When the observations were begun, three per cent of the land in a tract of about twenty-five square miles about this section was in forest and the remainder open land. At the end of the period of recorded observations, six years, the forest area was 80%. During that time the steadily progressive increase in rainfall at this station reached 22% at the end of that period; 10% might be taken as the probable average increase of rainfall due to the forest.

The forests have a greater influence in affecting the runoff. They prevent the rapid melting of the snow in springtime. In the cool shelter of the forests the snow lies longer, and the waters flow from them more gradually. The spring flood is thus retarded, its destructive results decreased, and much of the water conserved by sinking into the ground to appear later in springs.

The water flowing from the melting snow in spring-time or as the result of showers of rain finds an obstruction in the absorptive power of the humus of the forest floor. This loose covering made of leaves, twigs and other vegetable matter has an absorptive capacity equal to 50% of its own weight, and the greater the depth of this covering the larger quantity of water it can hold. This water is given up slowly or percolates through the earth to springs or streams. One foot of this vegetable covering will take centuries to produce. It may be destroyed in a day by forest fires, or exposed to the rush of water by the clearing of its forest covering, be washed off completely, leaving a bare and unobstructed slope to the onrush of the flood.

The trunks and roots of trees and shrubs both great and small present a mechanical obstruction to the flow. The tree roots, pentrating deep into the earth, open up channels through which the rainfall may be carried down into the lower strata. and thus the water which the forest floor holds is being drawn off to the lower levels and reaches the streams and springs long after the surface flow is gone.

The general effect of the forest therefore is to regulate and moderate the extremes of flow of water in the streams, and it is this quality of regularity and dependibility which makes such streams perennially valuable. In a good water supply one of the most important requirements is a regular and sustained flow. If the forests were stripped from the watersheds the regulative influence they exert would be gone.

And there are other strong reasons for proper management of the forests in a prairie country where forests are entirely confined to the hills and mountains. From such elevations only can a supply of timber and lumber for building purposes be obtained, unless as it is imported from outside districts, and in spite of the substitutes for wood found in so many ways, the quantity used is steadily and rapidly increasing. For fuel supply wood may not be so important in districts such as this with a good coal supply, but even if such is the case, large quantities of wood are required to timber the mines. It has been estimated by the Geological Survey Department that the quantity of coal on the eastern slope of the Rocky Mountains is twenty-two and one half billion tons. The quantity of wood required to mine this coal is forty-five billion feet of mining props, the product of nine million acres for sixty years.

Of course while the preservation of forest growth on the watershed is helpful to the water supply, it will not absolutely prevent floods. Hot weather among the snows and glaciers of the mountain tops may send down sudden rushes of water which can only be checked, if checked at all, by large reservoirs such as might be found in the lake basins along the streams. Sudden heavy rains or clouds bursts over the open country may cause floods over which the forest has no influence.

For the proper management of the forests so as to preserve their beneficial influence the following things are necessary:—

1. Protection against fire. A patrol by fire rangers especially along the line between the open country and the forest. Ploughed fire-guards along the railway lines, and at all other specially dangerous points. This is already provided for, but not adequately.

2. The confining of settlement to the fertile valleys, and the keeping under tree growth of the steep hills and mountain slopes where agriculture is an impossibility.

3. The cutting of the timber so as to preserve the forest cover. It is not necessary to prohibit cutting, but hitherto the cutting has been done without regard to the future of the forest or anything but the immediate supply necessary. Careful cutting with reference to the future and the water supply may be a little more troublesome than the present methods, but it will save the far greater trouble resulting from the destruction of the forests and their regulative effect.

4. The reforestation by seeding or planting of the burned or denuded areas where natural reproduction is not accomplishing the result.

The area denuded of forest by the axe or fire, is large and is steadily increasing, and no adequate measures have yet been taken to repair the damage. It takes many years to grow a tree. Observations made last year in the Rocky Mountains, show that the Douglas Fir requires ninety years to reach a diameter of ten inches, the spruce seventy-five years and the lodgepole or black pine sixty-five years. The only way to grow a tree is to start with the seed. The work of reforestation should not be delayed.

The Chairman then called upon Mr. R. H. Campbell, representing the Department of the Interior to report upon the result of the resolutions passed at former conventions.

Mr. R. H. CAMPBELL.

I am sure that Mr. Bennett has expressed to you much better than I could do the attitude which the Minister of Interior and the Department have taken towards irrigation in the West. The Minister has always been anxious to assist this convention in any way he possibly could and any suggestions that have been made as to the best method in which he could assist it have always been welcomed by him. We have, as Mr. Bennett has said, printed the reports of the last two conventions and I am sure the Department will be glad to print the report of this convention. Whether the convention wants to ask for anything more than that I do not know, but it is always in their hands to ask for more if they want it.

There were several resolutions passed by the different conventions, relating partly to forestry and partly to the water supply question. In regard to the water supply question, the first convention asked that more thorough steps should be taken to have the measurement of the water supply that we have available.

In the early stages of irrigation and development in this province, the work was in charge of Mr. Dennis, who inaugurated a system of measurement and carried it on sufficiently to get a working basis for the administration of the Irrigation Act. Unfortunately, Mr. Dennis found interests elsewhere which took him away from the Dominion Government service, and the irrigation work was made somewhat of a side issue.

In connection with irrigation work, the measurement of streams was not carried on very thoroughly and as a result the measurements that have been taken more recently have not been taken very systematically and have not been well related to one another and the results that have been worked out from them are not very reliable or satisfactory. The Department however is taking up this work actively now. The Western district has been divided into three hydrographic districts, Lethbridge, Calgary and Maple Creek, as a preliminary, but as the work of measurement and gauging of streams developes it may be necessary to subdivide them further.

In regard to the preservation of forests on the eastern slope of the Rocky Mountains, the Department has provided for fire patrol and regulating the timber licenses; and the reservation in the Cypress Hills will be enlarged.

In all respect the results of the convention are good. The Department relies to a large extent on the reports of conventions such as this one and they always have its full sympathy.

The convention then adjourned till evening.

THURSDAY EVENING SESSION.

The convention on opening Thursday evening, at once proceeded to a discussion of the resolutions as follows:—

Resolution Number I.

Moved by C. W. Peterson, seconded by T. Galloway.

That the best interests of this convention demand the service of a permanent secretary in order that a vigorous effort may be made during recess to promote the objects of the organization and generally to insure greater uniformity and continuity in the business of this convention, and that the said secretary, in conjunction with the executive committee, be charged with the duty of approaching the various governments and private individuals for annual grants with a view of creating a permanent revenue, and that the executive committee of this convention be authorized to take the necessary steps to secure the services of such a permanent secretary.

Mr. Peterson.—It is almost unnecessary for me to say anything very lengthy on this subject. It goes without saying that no organization can be successful and prosperous without having a permanent official to look after the work in connection with same. So far we have had very successful meetings of this association, but in order to insure a continuity of the same I believe it is absolutely necessary for us to have a permanent officer, and my idea in presenting this resolution is that a permanent secretary should be appointed and a local secretary should be appointed at the place where the convention is to meet.

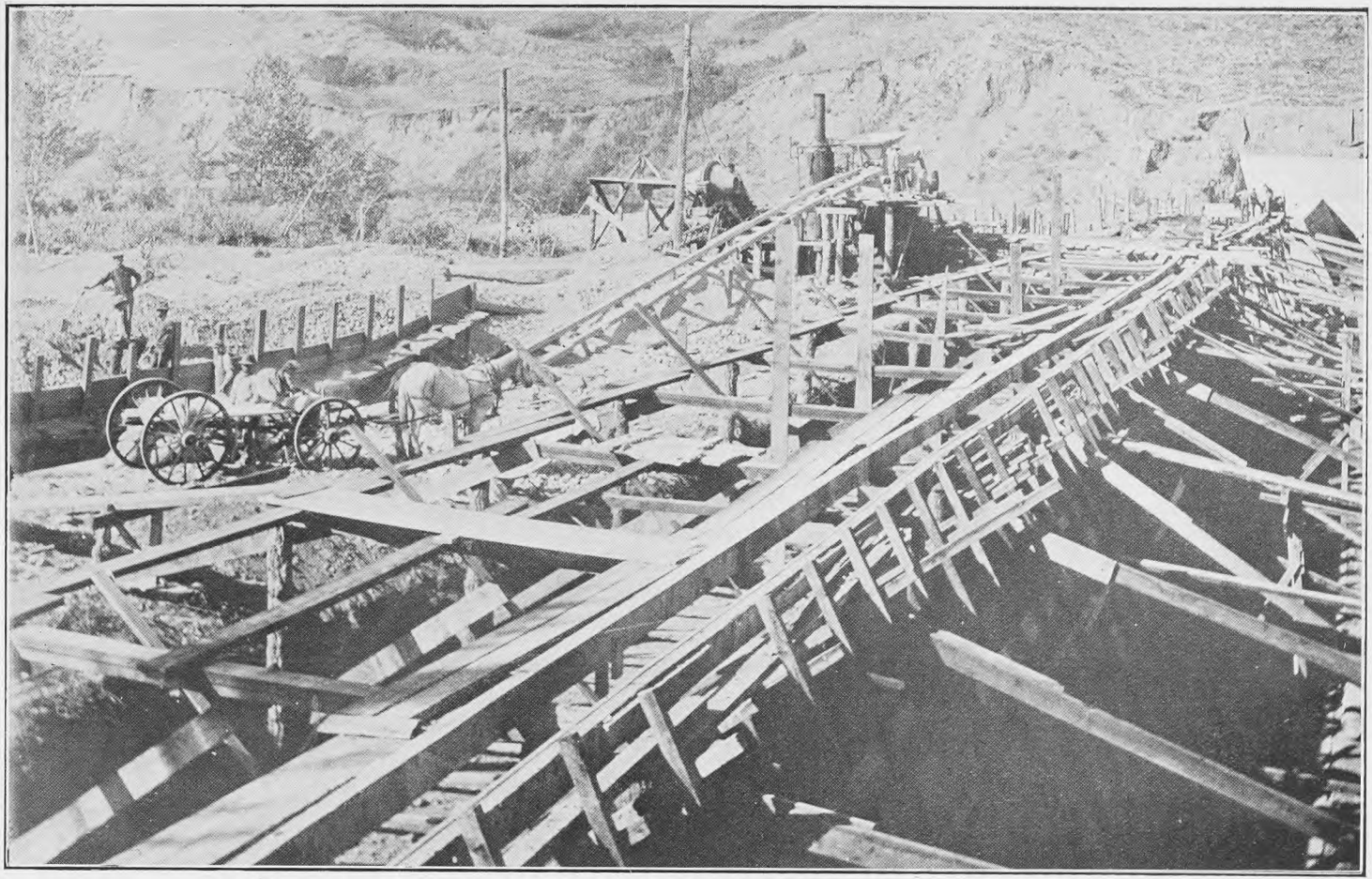
With regard to the revenue I think that the various governments should be approached. The work of this convention is more or less of an educational nature, and I am sure the various governments would be very glad indeed to contribute.

Mr. Galloway.—This convention has done such good work in the past that I think a permanent secretary is absolutely necessary to carry on and continue the work.

Mr. R. H. Campbell.—I have had some experience in connection with the Canadian Forestry Association in the handling of the work of an association similar to this one. After working along some time without a permanent secretary, it was decided that if the association was to continue and do effective work a permanent secretary was an absolute necessity, and we now have such a permanent officer, and I have no doubt that it will result in very much more effective work being done, and I think it is a very good step for this association to take.

In regard to funds I am not in a position to speak for the government, but I have no doubt that they will do just as well in connection with the work of this association as they have done for the Forestry association.

Resolution carried unanimously.



False work at spill Dam—Southern Alberta Land Co.

RESOLUTION NO. 2.

Moved by William Pearce, seconded by E. B. Knight.

Whereas with many owners of irrigated lands or those on which irrigation is possible in the provinces of Alberta and British Columbia, the best soil product and the application of water thereto is a new and untried problem;

And whereas to meet these conditions the United States government has instituted a system of bulletins issued at frequent intervals, giving information on the subjects specified in the foregoing paragraph;

Therefore be it resolved that the provinces of Alberta and British Columbia, through the proper departments of the same, be requested to institute and give effect to the issuance of such bulletins, and it is suggested that a prominent feature of said bulletins be contributions and inquiries by parties giving their experiences and obtaining of information.

Mr. PEARCE.—Irrigation to a great majority of us in Alberta and to a very large percentage in British Columbia is a new and untried subject and too much information cannot be disseminated to those who are carrying on the development of irrigation, and by the issuance of such bulletins one not only learns from his own experience, but also from the experience of a large number of individuals, therefore I think it unquestionable that it would be money well spent. The bulletins that are issued by the federal government of the United States come out very frequently with regard to irrigation as also very many other subjects. The bulletins could be printed at a nominal fee and I do not think that the provincial governments of Alberta, British Columbia, and as there is a representative of Saskatchewan here I will include the province of Saskatchewan, could spend any money to better advantage than along the lines indicated in this resolution. The main thing would be to put it in charge of some one who was qualified to edit and who could get in touch with all the irrigation men in his province and try and interest them in the way of relating their experiences of irrigation. I feel positive that the expenditure would never be regretted by either the government or the public.

Mr. E. B. KNIGHT.—I do not know, Mr. Chairman, that I have anything to say on the matter. The only literature that I have ever seen is what has come from the United States, and I can only say that I have much pleasure in seconding Mr. Pearce's resolution.

Mr. C. W. PETERSON.—There is nowhere that the subject of irrigation is more important than it is in the western portion of Saskatchewan.

Mr. HARCOURT.—There is no doubt that literature issued in that way would be of the greatest value, because every man is experimenting more or less, and if you can gather the remarks of these persons every one interested in the subject of irrigation will profit thereby.

Mr. DENNIS.—I can say this: that the work which has been done by the department in connection with the education of the people on the subject of the use of water for irrigation, the character of the crops and the method of producing them has been of incalculable value in the west, but the greatest work has been with reference to the question of the law relating to the use of water.

In the United States they have for a number of years devoted their time and energy getting out bulletins containing information in regard to the laws of the different states and making a comparison of the laws elsewhere with the ultimate object of trying to present an ideal law which they hope the different states will gradually adopt, and in this connection, as stated at our convention last year, they asked Canada to contribute by giving them a discussion on our law, which I had the honour of getting up, and which they issued as Bulletin 86 of the Department of Agriculture and issued 50,000 copies.

We were just told by Mr. Bennett of the great work done for the cause of irrigation in the United States by Mr. Secretary Wilson of the United States Department of Agriculture by the issue of these bulletins, which has done more than anything else to arouse the people of the different states and assist them materially in the passage of amending acts. I would refer especially to the very broad act which was passed last session by the state of Oregon.

I am only pointing out these facts to show the great work that can be done by the issue of these bulletins and by taking up this work the present Departments of Agriculture will be doing a very great deal to assist the movement.

PREMIER RUTHERFORD.—The arguments of the mover and seconder, and especially the argument of Mr. Dennis and of those who have spoken on this matter, I think tend to show that it is the Federal government and not the provincial government which should issue these bulletins. I do not think that the people of this province should ask the provincial government of Alberta to appoint a man who would edit these bulletins. I do not think that this should be required of the provincial government. However, it is a matter which the government of Alberta will take into consideration, and will consider it from every point of view. Mr. Dennis has stated that it is Mr. Wilson of the federal government of the United States who is doing such effective work, and I see no reason why the federal government of Canada should not do as effective work.

Hon. Mr. FULTON.—While I can make no promises on behalf of our province, still I think with the others who have spoken that it is undoubtedly a very important subject and one that our government should take into very serious consideration. We are in a different position in British Columbia to what you are in Alberta and Saskatchewan. We own and administer the lands as well as the water. With the exception of the 20-mile railway belt and the Peace River district, the greater part of the lands belong to the province of British Columbia, and for that reason we are in a different position with regard to that resolution than the other two provinces are. I may say that we have in the Hon. Mr. Tatlow a very energetic Minister of Agriculture. He has been increasing that department very considerably during the past year. He has been adding to the staff by appointing graduates from Guelph and other colleges in the east ,and I have no doubt whatever if I can get him to see this resolution in the light that this convention looks at it, that I shall probably be able to induce him to take some steps along the lines of the resolution. I think also with Premier Rutherford that the federal government might extend its operations in this line in British Columbia as well as in this province. They have had for years past an experimental farm in British Columbia, but it is on the coast where conditions are entirely different from the interior, and I think they could with advantage extend their operations to the dry belt in the interior, and it would effect undoubtedly a great deal of good in that direction. I will bring the matter to the attention of the Hon. Mr. Tatlow and see what we can do along these lines.

Mr. R. H. CAMPBELL.—In regard to the bulletins, there would be no difficulty in preparing such in our department and having them distributed. I think though that the Department of Agriculture can speak with much more authority in regard to irrigation practice than our department, and I think you will have to look to Mr. Fairfield.

Mr. FAIRFIELD.—I do not know that anything of particular interest suggests itself to me more than that information along these lines would be of inestimable value. I may say that the Hon. Mr. Fisher will be here in the West very soon and I will then take the matter up with him. Resolution carried.

RESOLUTION No. 3.

Moved by G. O. Kerr, seconded by Randolph Bruce.

Whereas owing to the prevalence of high winds and from other causes great danger exists of the spread of noxious weeds by means of irrigation canals and ditches;

And whereas the promptest and most expeditious measures are required to destroy weeds growing upon the banks of water distributing systems before such weeds shed their seed and become a danger to the whole district;

Therefore be it resolved that the Governments of British Columbia and Alberta cause such amendments to be made to existing legislation dealing with noxious weeds, placing the duty of keeping all canals and distributaries clear of noxious weeds upon the company or individual responsible for the maintenance and repair of such canal or distributary.

Mr. G. O. KERR.—Every person who has had any experience in irrigation will see the importance of this resolution. I believe there is already legislation in regard to irrigation canals, but perhaps this applies more particularly to individuals who own branch ditches, and there is no question but that those persons are responsible for the clearing of noxious weeds from these ditches.

Mr. RANDOLPH BRUCE.—It gives me much pleasure to endorse Mr. Kerr's remarks on the opening speech given by our able chairman, Mr. Bennett, who referred to the great benefits that had been conferred on our western provinces by our irrigation systems. These benefits are only being realized very gradually. I may say in fact that they are only in their infancy. I speak now as representing an irrigation company. We have got to be very careful indeed that we do not hand out a bunch of trouble in the shape of noxious weeds. I have therefore very much pleasure in seconding Mr. Kerr's resolution.

Mr. HARCOURT.—We have in Alberta all the law on the statute books necessary to clean up the weeds, but it is enforced with a great deal of discretion or there would be great hardship. We have this year a man in charge of each district, whose duty it is to see that the farmers destroy these noxious weeds. We have been for a number of years warning farmers, but from now on we are going to use the law a great deal more because if we do not we are going to have some of the best sections of the province absolutely destroyed by weeds. We have sufficient law to do the work, and we are trying to get inspectors out to see that the work is done.

Mr. FAIRFIELD.—There is just one special point that I would like to ask Mr. Harcourt:—"If a man owns a farm, half a mile from the main lateral and has got the right to run a small ditch through his neighbour's farm to his own, but of course he does not own the land through which the ditch runs, but still the farmer who owns that land gets no use of the ditch, whose duty is it to keep the ditch clear from noxious weeds?"

Mr. HARCOURT.—The man who owns the farm.

Mr. DAWSON.—I would like to ask Mr. Harcourt regarding land sold to non-residents?

Mr. HARCOURT.—We clean that up. Resolution carried.

RESOLUTION No. 4.

Moved by W. H. Fairfield, seconded by C. W. Peterson.

That this convention, recognizing the great need that exists for educational work in regard to irrigation, owing to the fact that the vast majority of the farmers who

settle on irrigable lands in the Western Provinces, have had no previous experience in the use of water, desire to urge upon the Saskatchewan, Alberta and British Columbia Departments of Agriculture, the importance of incorporating amongst their Institute lecture staffs experts on irrigation farming.

Mr. FAIRFIELD.—This resolution probably overlaps the resolution that has just been passed, but I might point out that it indicates a specific way in which the Provincial Department of Agriculture can aid in the education of farmers who are farming under irrigation. As you all know, farming under irrigation means intensive farming. Intensive farming is another word for specialized farming, and if one is going to carry on that farming he needs special training. Now, a great many of our farmers or settlers are taking up irrigated lands and starting farms without previous experience, and anything that would aid them and help to teach them to avoid mistakes will be of value. It seems to me that the resolution on the face of it is so important that I could hardly say anything that would add force to it.

Mr. PETERSON.—I do not know that there is anything further to add. I can only say this: That if no action is taken by the provincial government, it is not much use to select people to come here and settle on irrigated lands unless they are trained to properly farm these lands. My idea in regard to this resolution is that men of recognized standing connected with the educational institutions in the United States should be asked to come here and deliver lectures. It is merely asking the Provincial Department of Agriculture to extend operations a little further than they are doing.

Mr. HUCKVALE.—I think that the suggestion embodied in the resolution is a very good one, and it certainly will point out to the premier of this province in what way his government can be of use to people who are starting in farming by means of irrigation. We are altogether ignorant as to the best way of applying water, as to how much water to a certain acreage should be applied. I am heartily in sympathy with this resolution. Resolution carried.

RESOLUTION NO. 5.

Moved by J. S. Dennis, seconded by R. Bruce.

That the Dominion government be petitioned to cause a Forest Reservation to be made covering the entire east slope and highest foothills of the Rocky mountains, and within the railway belt of British Columbia, in order to prevent the deforestation of this area, leading to the rapid melting of the snow at the headwaters of the mountain streams, thus causing destructive floods and wasting the water required for irrigation in Southern Alberta.

Mr. DENNIS.—I have listened with a great deal of interest to the remarks made by Mr. Campbell, and would say that I think the thanks of the people of this province are due to him and to his department for the work which they are doing, and it is for this reason that I move this resolution. While Mr. Campbell has explained to us what they are doing to preserve the timber on the eastern slope of the Rocky mountains, by appointment of fire rangers and the making of fire guards, I think that it is most important that this very important territory should be covered by a vast reservation.

Now, as for the southern portion of the province of Alberta, there is no more important question before us to-day than a reservation covering the eastern slope of the Rocky mountains. The importance of this matter was realized by the Dominion government a good many years ago, and at that time a resolution was agreed covering that area, but for some unaccountable reason it was subsequently removed.

In the Cypress hills a reservation which is of the greatest importance to the province has been made, and those who know conditions must realize that if the timber on the eastern slope of the Rocky mountains is to be destroyed and cut down indis-

A two and one-half yard Steam Shovel at work—Southern Alberta Land Co.

criminately a large amount of money now being invested will be thrown away, because we will have exactly the same conditions as they have had in the United States, where the rainfall and snowfall is just as great a necessity as it is in this country.

Mr. BRUCE.—It is almost superfluous to add anything, but still, as a representative from British Columbia, I would like to endorse what Mr. Dennis has said. I have been a resident of that province for twelve years, and during that time I have seen a remarkable change due to the removal of timber, particularly from the headwaters of the creeks. Of course I know the Dominion government is fully alive to the danger of removing this timber, and where their attention has been particularly drawn to it, I know they have put reservations on same. I refer particularly to this in the neighbourhood of Kamloops, where every drop of water is a very important factor in the development of that part of British Columbia. Going east from Kamloops towards the summit of the Rocky mountains, I do not think that any reservation has been put on by the Dominion government. This is particularly due to the fact that so far there has been no particular call for it by settlers, and there is no doubt when the necessity arises the government will take action. I think that both the Dominion government and the provincial government are fully alive to the necessity for ample protection of our forests, and I personally look forward with every confidence to the putting on of such reservations. I have very much pleasure in endorsing Mr. Dennis' remarks.

Hon. Mr. FULTON.—In December we started a reservation on all timber in the province of British Columbia, and since that time we found that no timber has been taken up. This reservation will be kept on for an indefinite period in order to protect the watersheds of various streams. The Timber and the Forestry Commission will commence sitting on the 16th of this month, and the matter of protection of forests will be thoroughly discussed. I consider the resolution a very important one. Resolution carried.

RESOLUTION NUMBER 6.

Moved by George M. Hatch, seconded by H. A. Suggitt.

Whereas with the opening of irrigation districts in Alberta there has arisen a question as to where the responsibility belongs for keeping open the roadways by bridging, whether it should be the companies or the provincial government.

And whereas pending the settlement of this question, the farmers and travelling public in some districts are much inconvenienced, being forced to cover much unnecessary mileage in marketing their products, and in their intercourse with nearby neighbours.

Therefore be it resolved that this convention petitions the provincial government at Edmonton to urge the question to a speedy issue, and should it seem that a settlement will be long delayed, that the province undertakes the work at once, advancing the cost for same until such time as the matter is finally adjusted and the responsibility for the work placed where it belongs.

Mr. HATCH.—I am not sure perhaps that this is not a local matter. I do not know so much about this resolution. I move it rather by request of a large number of people living in this district. We are embarrassed; we have no authority apparently to bridge roadways across ditches. We go to the Alberta Railway and Irrigation people and we are told by them that it is the duty of the province. We go to the provincial authorities and we are told it is the duty of the Alberta Railway and Irrigation Company. We have over 100 miles of canals through this district, and where these canals cross the roadways both the farmers and the travelling public are put to great inconvenience, and at times are forced to go miles around in order to get across. It occurred to us that it might perhaps be proper for this convention to pass a resolution in our behalf, and say to the government of the province of Alberta: 'You may

not be responsible, but you might advance the cost of furnishing these people with facilities for crossing these canals. You do this, and later on when it is determined between the parties who are responsible, the amount expended to be paid for by one or the other of the parties, but in the meantime we want the bridges, and if this matter at issue and now before the courts is to be drawn out for several years, we should be afforded these facilities.' We are entitled to our roadways through this district. I am rather sorry, Mr. Chairman, that I do not see present here the Coaldale delegation or our local delegation. I think these people would all like to speak on this important subject.

Mr. SUGGITT.—I have no doubt that Mr. Hatch has covered this ground as it should be done, and I think it should be taken up. We have been a long time without bridges, and it is a matter of great importance to us that we have bridges, and I hope that this convention will take whatever steps may be necessary to have the matter brought before the proper authorities. I take pleasure in seconding the motion.

Mr. HATCH.—What is the custom in other parts of Canada? Who bridges the roadways?

Mr. BENNETT.—Section 25, Irrigation Act, Chapter 61, Revised Statutes of Canada, reads as follows:—

'Any applicant constructing works under the provisions of this Act shall, during 'such construction, keep open for safe and convenient travel all public highways 'theretofore publicly travelled as such, where they are crossed by such works, and shall 'before water is diverted into, conveyed or stored by any such works extending into or 'crossing any such highway, construct, to the satisfaction of the Minister, a sub-'stantial bridge, not less than fourteen feet in breadth, with proper and sufficient 'approaches thereto, over such works.

'2. Every such bridge and the approaches thereto shall be always thereafter 'maintained by such person or company. 61 V., c. 35, s. 37.

Mr. HATCH.—We want these facilities. We are settling up this country and our roadways are of the greatest importance to these settlers. We hope for the passing of this resolution to influence the Government to take steps in the matter at once.

Mr. BENNETT.—Mr. Premier, what do you think of that?

Hon. Mr. RUTHERFORD.—It can do no harm to pass the resolution. I do not know whether the Irrigation Company would undertake to do what Mr. Hatch suggests. We might put in the bridges. However I can see no objection to the passing of the resolution. I am not going to make any promises that the government will undertake to carry out the wishes of the convention. It would not be right for me to do so.

Mr. LANE.—Do you mean to say that the Irrigation people block up these roads? What is the matter with making these people put in bridges?

Mr. HATCH.—As I understand it, the Irrigation Company building these canals are only required to bridge roads travelled as such when the canals are built.

Hon. Mr. RUTHERFORD.—I take the stand that it is more the duty of the Irrigation Company to provide these facilities than that of the Government. Resolution carried.

Excavating for north wing of Diversion Dam.—Southern Alberta Land Co.

Mr. C. W. Peterson being called upon, presented the following paper:—

THE MISSION OF IRRIGATION UNDER SUB-HUMID CONDITIONS.

With Special Reference to Southern Alberta.

The subject of this address is perhaps the most important before the convention. Unless we are able to demonstrate the value of irrigation under sub-humid conditions, such as prevail in Southern Alberta, *irrigation development will of course be impossible.* Something beyond humidity has however, to be taken into consideration. Our northerly latitude is a disturbing feature. The latter is what often creates doubt as to the efficacy of irrigation in Southern Alberta. There are on the American Continent, semi-tropical localities too numerous to mention, with sub-humid precipitation. The tender vegetables and high priced crops grow there profusely and the question as to whether or not irrigation is worth while never arises. That irrigation there, if not essential, is most beneficial, simply admits of no argument. In discussing this subject, therefore, with reference to Southern Alberta the question of latitude naturally becomes an essential factor.

A Retrospect.

It has been well said that "an ounce of experience is worth a pound of theory." The farmer by nature is conservative. Tangible evidence speaks more loudly to him than words. Unfortunately a combination of circumstances during recent years destroyed the possibility of our now having available in Southern Alberta, object lessons as to the value of irrigation that would settle the argument without further effort.

A word or two as to the early history of agriculture in Southern Alberta is necessary to properly grasp the present situation. Partly due to a number of very dry years, and partly to slovenly farming, matters agricultural in Southern Alberta became very acute in the early nineties. Many private irrigation systems were then in successful operation and great things were predicted when, in the course of time, our mountain streams should all be fully utilized in agricultural development. In March 1894, the "Southwestern Irrigation League of the Northwest Territories" was formed and held a convention at Calgary, where strong resolutions were passed calling upon the governments of the Dominion and of the Northwest Territories, to deal vigorously with the whole subject of irrigation, which was then seriously agitating the public mind. If untoward circumstances had not arisen, the cause of irrigation would have forged steadily onward from year to year, *so that by this time, elaborate arguments in favour of irrigation would have been entirely superfluous.* Irrigation progress, however, received a serious check when succeeding years of high water finally resulted in the total destruction of the cheaply constructed headgates of many of the small private ditches then in operation and, in some cases, caused the mountain streams to change their course. One or two wet years followed and ranchers, who up to that time depended largely upon irrigation for winter fodder, delayed the reconstruction of their intakes on a more permanent basis. Settlers then began to come into the country in large numbers and ranchers foresaw the speedy end of free grazing upon the public domain and prepared to go out of business. This situation removed the pioneer of irrigation from active business and it was only during quite recent years, that large corporations have interested themselves in the matter and they are now confronted with the task of again creating sentiment in favour of irrigation, and chiefly amongst a class of farmers entirely ignorant of the benefits and simplicity of irrigation farming.

Another Obstacle.

Simultaneous with the great rush of settlement into Southern Alberta, enormous strides had been made in "dry" farming culture. Every agricultural college in the westerly portion of America grappled with the problem of utilizing desert lands, that

could not be reached by irrigation, and wonderful success was encountered through the general introduction of summer fallowing and the use of special instruments with a view to the total conservation of the limited rainfall. This system, sometimes in a crude form, gradually permeated the whole of the arid and sub-humid agricultural area of America and was also largely practised in Southern Alberta.

The successful culture of winter wheat, a distinctly semi-arid plant, was another important feature that worked an entire change in the agricultural situation of Southern Alberta and gave a value to our non-irrigated farming lands that they had never before possessed. While the country as a whole, profited enormously by this development, there cannot be any reasonable doubt that it tended to delay the progress of irrigation materially.

A Popular Misconception.

The association of irrigation with the idea of desert reclamation has blinded the public eye to its enormous value in regions where the task of reclamation is not required. This is to be regretted, as irrigation should be recognized as an agricultural art of wide application and value. In fact irrigation is a system of improved culture, to be applied, like other means of improvement, when the soil needs it. Water is the most important food of plants, not alone because it enters in such volume into their tissues, but because without it, in adequate amounts, the plant cannot use other food in sufficient quantities. No one questions the wisdom of the saving and storing of manure and, for worn out lands, the wisdom of a generous outlay for commercial fertilizers, or the principle of soil improvement by means of drainage. The same attitude should exist in regard to irrigation. Irrigation, moreover, is not merely an expedient to ensure the safety of a crop. It has been demonstrated both by practical experience and by systematic experiment, that growth and production can be properly pushed by irrigation even when the natural moisture seems ample, and in this respect, irrigation aligns itself with fertilization and cultivation as a factor in intensive agriculture.

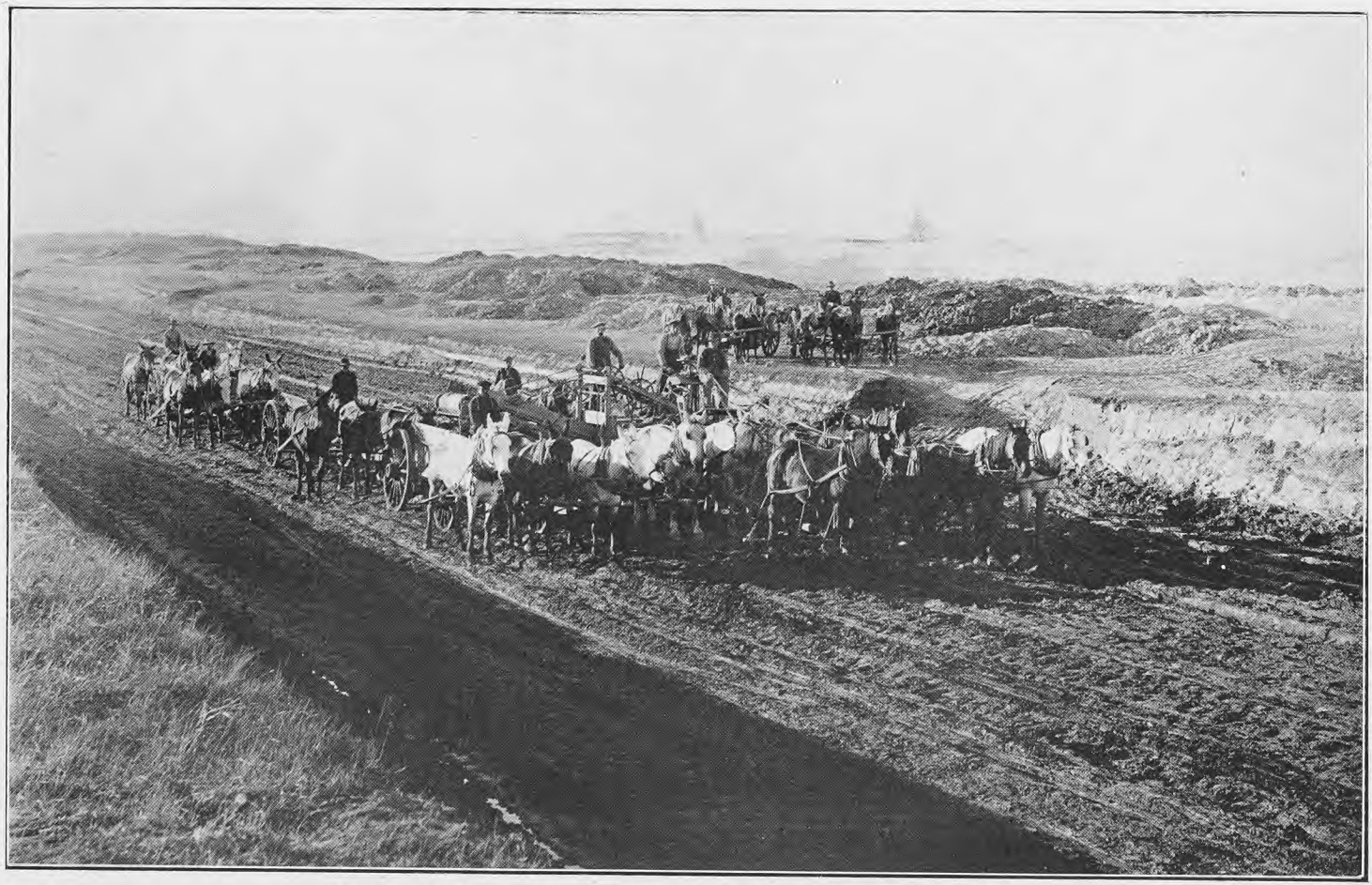
The Limitations of Dry Farming in Sub-humid Districts.

It would be idle to deprecate the valuable non-irrigated lands of Southern Alberta. The richness of the soils in the somewhat 'dry' belt of the American continent is simply marvellous. The record of winter wheat production in the interior portions of the Pacific States, where the conditions are distinctly semi-arid and typical of the 'dry' West, affords the best proof of what such lands are capable of producing. Wheat growing has been carried on there on the same land, year after year, since 1874, and the yields per acre are apparently as great to-day as they were thirty years ago. Under the circumstances, it is almost a legitimate conclusion that the semi-arid soils of America are practically inexhaustible.

Granting, however, that grain raising can be successfully carried on in every portion of Southern Alberta by adopting a system of culture designed to conserve soil moisture, the farmer following such a system will still be labouring under vast limitations. The summer fallow system, in the first place, reduces the crop area to one half of the farm and, secondly, is applicable to only annual crops that can be produced with a minimum of moisture. We may, therefore, take it for granted that dry farming, as a permanent proposition, must be practically confined to the ordinary cereals, principally winter wheat. The profitable production, year after year, of the most valuable crops of the farm, such as field peas, alfalfa and the ordinary clovers and other forage crops, becomes impossible, for the simple reason that the underlying principle of dry land farming, viz., storing up two seasons' rainfall for each crop, cannot, of course be followed on perennial crops.

Irrigation and Intensive Farming.

Diversity means the opposite of what might be termed the 'one crop' system. Irrigation stands for diversity, while dry farming in sub-humid countries means the



Grading Machine and Dump Wagons in 25-foot cut, Southern Alberta Land Co.

one crop system. There are enormous advantages in diversity. First, it enables the farmer to produce the greater part of his own living, with little or no cash outlay. Secondly, it puts him in a position where he is not so much at the mercy of adverse seasons. It also enables him to maintain the fertility of the soil and gives him every benefit which comes from a wise rotation, as well as enabling him to distribute his labour evenly over the whole year. To put the case in a nut shell, the main object of irrigation in sub-humid districts is the total elimination of summer fallowing by substituting artificial watering and a well conceived crop rotation. In other words, to develop a system of farming that will admit of the entire agricultural area being under crop instead of only one half of it, which would of necessity be the case under a dry farming system. It requires no argument to demonstrate the enormous economic advantages to the individual farmer and to the country at large by the doubling of the normal crop area. The final end of irrigation in Southern Alberta is, therefore, to reduce the average holding of the farmer and, at the same time enable him to attain better results on the smaller area of land.

Home-making and Money-making.

The farmer who settles in a new country has generally a two-fold object in view. First and foremost, he desires to establish a home for himself, his wife and his children. Secondly, he aims to acquire, sometime in the future, a competency that will safeguard himself and his family against want when old age overtakes him. We hear entirely too much regarding the financial side of farming, and not half enough about the home side. Men will endure the terrors of the desert or the rigours of an arctic winter to amass wealth in a short time. This, however, is not home-making. The first consideration of the home-maker is as to whether such surroundings can be created as will justify a permanent residence.

Most of the gentlemen present know something about the irrigated districts of the Western States. It is, therefore, needless for me to paint a word picture that will convey the difference between a home in an irrigated district and one, for instance, on the bleak prairies of the Dakotas. In the latter states, most of the farmers control 320 acres each. It is obvious that this condition involves scattered settlement and dreary isolation. In the irrigated sections farms are smaller and human intercourse consequently easier.

Schools have a larger attendance and consequently can demand the services of the most competent teachers; large towns spring up and furnish a local market for the products of the farm and, owing to the increased number of business houses, competition among merchants becomes keen and the farmers secure their merchandise at a low cost. Roads are better kept and the taxes of the community are never a burden, owing to the increased number of tax payers to pay them.

Trees make as much growth in a few years on an irrigated farm as they do in a generation on a dry farm. Flowers, shrubs, in fact, everything that makes the landscape beautiful and the surroundings homelike grow to profusion where water is available.

It is a significant fact, that the vast colonization project with which I have the honour to be identified, obtains the majority of its settlers from the States of North and South Dakota and the smallest number from the irrigating states. This in spite of the fact that the Dakota men have little or no actual knowledge of the handling of water for irrigation. It has been our experience that farmers residing in irrigated districts, even though their land is enormously valuable and the demand for it great, absolutely cannot be induced to move in any large numbers. The man on the irrigated farm in a few years creates a productive and a homelike home and, therefore, has no desire to leave it. The man on the half section of prairie farther east, regards his farm not as a home, but a means of creating a certain amount of wealth which he generally contemplates ultimately spending under more congenial surroundings. The points of view are entirely different.

The Final Proof.

While it is scarcely open to argument that for home-making purposes, there can be no reasonable comparison between the irrigated and the non-irrigated farm in sub-humid districts, the question might be raised as to whether the financial returns might not be greater under the cruder system of dry farming than under the more intensive operations of the irrigated farm, taking total investment and working expenses into consideration.

It is an incontrovertible fact that there is not an acre of agricultural land anywhere in North America that would not be benefited by artificial watering. Under the climatic conditions prevailing in Southern Alberta, there should, therefore, be very little question as to the value of irrigation. In fact, there should be no difficulty in demonstrating, that an acre of irrigated land in Southern Alberta will produce as much as any similar four acres of non-irrigated lands, and consequently, should be four times as valuable.

In the first place, the non-irrigated crop must be grown on summer fallow, where each two acres of land produces one acre of crop annually. This factor eliminates one-half of the crop area, which now stands two to one.

Secondly, it is not stretching the imagination unduly to assert that irrigated lands will produce twice as much as non-irrigated lands in any seven year period. The following statistics showing average gross return to farmers per acre for seven years, 1900-1907, taken from the Year Book of the United States Department of Agriculture, in various states of the Union, where conditions are in some degree similar to what they are here, establish a very fair comparison.

Crops.	Irrigated States.						Rainbelt States.				
	Colo.	Idaho.	Utah.	N.M.	Wyo.	Nev.	Mo.	Kan.	Okla.	Iowa.	Neb.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Wheat	18 75	17 57	18 32	17 26	18 93	25 70	10 10	9 09	8 23	9 44	11 35
Oats	16 00	18 66	18 26	16 20	16 56	24 62	7 60	7 71	9 95	8 01	7 75
Hay	20 07	18 65	21 25	26 63	14 38	22 07	9 93	7 67	5 11	9 75	7 71
Corn	(Not grown to any extent.)						11 65	10 14	9 16	11 73	9 37
Average of above	18 27	18 19	19 28	20 03	16 62	24 13	9 82	8 65	8 11	9 73	9 04
Potatoes	78 75	74 49	70 32	72 91	98 66	118 54	44 44	50 23	67 38	38 61	39 31

Average of all crops except potatoes—

Irrigated States	$19 79
Rainbelt States	9 07

Wheat, 1901-1907.

North Dakota	$8 63	Chief crop.
South Dakota	8 18	

Results from Home.

The case for irrigation in Southern Alberta does not, however, rest entirely on experience gained elsewhere. It was only in 1906 that systematic experimental work under irrigation was inaugurated here and the Dominion Experimental Farm for Southern Alberta was established. The farm is divided into a "dry" farm and an "irrigated" farm. The duty of the superintendent is to gain the best possible results

Grading Machines working where the cut will be 50 feet deep. Southern Alberta Land Co.

under dry land culture, on the one hand, and, on the other, to demonstrate the value of irrigation in Southern Alberta. It will therefore, be carefully noted that it is not, in any shape or form, the duty of the superintendent to demonstrate the value of irrigation as compared with dry land farming. Any conclusions reached on the farm can, therefore, be relied upon as being absolutely unbiassed and disinterested.

While the object of establishing the Experimental Farm was not to encourage irrigation farming at the expense of dry land farming operations, it is possible to make instructive comparisons between results upon the same farm and under the same management, of crops grown under irrigation and those on the non-irrigated area.

The yield of varieties of spring wheat varied from 25 per cent to 80 per cent in favour of the irrigated plots, and two-rowed barley from 20 per cent to 50 per cent. Irrigated potatoes in no case yielded less than 100 per cent heavier than on non-irrigated land and in one case 300 per cent, while vegetables and sugar beets showed a gain of from 30 per cent to 100 per cent better under irrigation. Fodder corn, as would be expected, yielded from 50 per cent to 275 per cent better on the irrigated plots.

The above are the first official figures bearing on the value of irrigation in Southern Alberta that have ever been produced. Furthermore, the almost ideal season and copious natural rainfall rendered the conditions enormously in favour of the non-irrigated farm. Again, these results were obtained on newly broken land, while it is readily admitted that irrigation farming will not begin to yield maximum results until several crops have been taken off the land and the soil has thus been reduced to a good mechanical condition. Under the circumstances, it is abundantly evident, that the magnificent showing of the irrigated crops on the Dominion Experimental Farm is but an inkling of what the future has in store for the irrigated sections of Southern Alberta.

The Expense Account.

The figures quoted in the foregoing will make it abundantly clear, that is is reasonable to expect, throughout any period of seven years, at least twice as great a volume of production from each acre of irrigated crop as from each acre of non-irrigated crop, and with only half of the non-irrigated farm in crop each year, the other half being under fallow, it would appear to be a reasonable proposition to claim for irrigated land a total average crop production of four times the volume of an equal area of non-irrigated land of similar quality, under the conditions prevailing in Southern Alberta.

While no exception should be taken to the above conclusion, the question might be asked, at what expense these results are obtained, and, granting that the crop returns from irrigation are vastly greater than those obtained on non-irrigated lands, whether the additional expense of applying water will not more than consume the increased production. We must admit at once that farming under irrigation is more complex than "dry" farming; it requires more attention. Whether the actual expense in connection with hired help is any greater, acre for acre of actual crop, is doubtful.

Irrigated land in Southern Alberta generally sells for ten to fifteen dollars more per acre than non-irrigated lands. The company I am connected with sells irrigated lands at $30 per acre and non-irrigated lands at $18 per acre. It would, therefore, appear that 160 acres of irrigable lands would cost a great deal less than twice the area of non-irrigated land, which would be required to provide an equal crop area. Besides, the cost of fencing would be proportionately smaller. The cost of providing the distributary system and surface preparation on the irrigated farm would not nearly equal the difference.

This makes it clear that the capital expenditure to produce a given area of crop annually is considerably smaller on irrigated than on non-irrigated lands, which brings the former down to a smaller interest basis.

The next point is the cost of operation. The irrigated farm is subject to the additional expense of applying the water. But the non-irrigated farm requires con-

tinual surface culture of the fallow land. A careful comparison of cost will be found to balance the account fairly evenly, if anything the difference will be in favour of the irrigated farm, where the distributary system is properly laid out and the slopes are fairly long.

It would be superfluous to more than briefly refer to the enormous advantage of the rotation of crops on the irrigated farm, the beneficial effects upon the soil of this practise and the baneful effects of the "one crop" system. This in itself is the most eloquent testimony in favour of irrigation in Southern Alberta.

The Economical Aspect.

Great economic questions generally lend themselves to a commercial and statistical solution. The evidence bearing on the feasibility of irrigation farming in northerly latitudes, under sub-humid conditions, is clear as daylight. But it is not only from the standpoint of the welfare of the individual farmer that the question should be considered. The best interests of the whole community is a matter of even greater importance. Irrigation farming primarily comes into competition with winter wheat production as a plain business proposition. Many contend that with dollar wheat there is more money in the latter branch of farming. Let us turn our attention for a moment to the record of the sub-humid districts of California where winter wheat was the staple crop. Fifteen years ago California's wheat crop had a minimum marketable value of $35,000,000, increasing in years of prosperity to $60,000,000. To-day it is estimated that the 1909 wheat crop will be worth $7,000,000. Why this sudden falling away in production and apparent loss to the State of California? The development of irrigation under sub-humid conditions, is entirely responsible. Thousands of acres which were formerly given over to the raising of wheat have by reason of the installation of irrigation systems been turned into orchards, vineyards, alfalfa fields, dairy farms, vegetable gardens and poultry runs, and these varied industries now give a total annual return of $250,000,000 to the agriculturists of California. This is an increase of over four hundred per cent of results secured some years ago from agriculture practised under natural rainfall conditions. Who can doubt that the individual farmer, as well as the state, is enormously benefited by the change?

Live Stock the Foundation.

In studying the economic side of irrigation the first fact that must be thoroughly grasped is, that the foundation of irrigation enterprise is not, by any means, the production of either fruits, cereals, roots or garden truck, but the feeding and finishing of live stock, a branch of farming that can be most efficiently and economically carried on in northerly latitudes where conditions are more favourable for live stock husbandry than in southern climates. This has been the history of irrigation development in every state of the Union and the proof is, that of the total irrigated area in crops in the United States at the time of the last decennial census sixty-four per cent was in hay and forage. The actual figures are, total acreage 5,712,000; in hay and forage, 3,666,000 acres. This tells the tale.

The introduction of alfalfa on the irrigated farm has revolutionized farm methods. It is now recognized that the profits from the production of alfalfa and the subsequent feeding of this crop to live stock, is of so profitable a nature that it absolutely throws into the shade cereal productions and fruit growing and all the other so-called "expensive" crops that are popularly supposed to monopolize the irrigated farm. Enormous feeding industries have been established throughout the irrigated section of Colorado, Wyoming, Montana and other states, from which the finished article is shipped to the eastern live stock markets at highly satisfactory prices. History will no doubt repeat itself in regard to the irrigated lands of Southern Alberta.

THE MISSION OF IRRIGATION IN SOUTHERN ALBERTA.

Leaving out of the question the belts producing the tender fruits and vegetation of all kinds and confining our attention to the irrigated portion of the continent of North America where the agricultural lands are confined to the production of the hardier crops, the more important standard economic plants raised on the average farm there may be classified as follows in their relation to irrigation:

(1) Plants that cannot be produced profitably without irrigation, namely, alfalfa, clover, sugar beets, superior malting barley, tender vegetables and strawberries as a market crop.

(2) Plants that can be irrigated with distinct advantage every year and would be a failure during the dry seasons without irrigation, namely, field peas, garden stuff, trees, small fruit, rape, timothy and other forage crops requiring considerable moisture.

(3) Plants that will respond to irrigation during most years, namely oats, six-rowed barley, soft winter and spring wheats and forage plants adapted to dry land conditions such as western rye grass, bromus inermus and other semi-arid grasses.

(4) Plants that will give increased yields under irrigation during occasional seasons only, namely, hard winter and spring wheats, flax, and rye.

The foregoing classification of northern economic plants presents the irrigation question in a nutshell. No practical agriculturist can fail to recognize the fact that the scope for irrigation in northerly latitudes under sub-humid conditions is enormous, and that this system of farming will soon occupy a vitally important sphere in the agricultural operation of Southern Alberta.

Mr. BENNETT.—Gentlemen, I have in store for you a great treat. If my friend Prof. Campbell will kindly come to the platform, I will get ready to introduce him to this audience.

It is wonderful how these Campbells come to the front in public. The name and fame of Prof. Campbell precedes him wherever he goes.

The Professor will speak to this convention on the question of dry farming and the matter will be considered by him from all standpoints.

PROFESSOR CAMPBELL.

Mr. Chairman and Gentlemen,—On my trip here I have experienced a little inconvenience and some disappointment. I was in Texas when I started for Calgary, and when I arrived at the boundary line I inquired where the train for Lethbridge was and I was informed that I could not get to Lethbridge until to-night. The only thing I saw was a section house. If there had been any airship service up here I would have wired them to relieve me.

Upon the question of cultivation as applied to irrigation, I do not suppose there is any problem before the irrigator as important as that of knowing how to cultivate his land as well as knowing what crops to grow upon it. The amount of water necessary in the growing of the plant depends upon the amount of air that mingles with the water in the soil. In other words: too much water in the soil is detrimental. Only a certain quantity should be used in order to get the best possible results, and that certain quantity must always be available. At North Flat, Nebraska, where we have a branch of the Nebraska Agriculture College, the yield three years ago was 54 bushels to the acre, 62 bushels two years ago and last year 67 bushels. These marked results were obtained simply because there was plenty of moisture in the soil to produce the result. Now I want to impress upon you irrigationists that it is not our land alone that produces the result, but it is the necessary quantity of water combined with the necessary quantity of air that produces the result. We have proved that repeatedly. The soil must always be fine and firm and free from crust. There is no section of land where a man cannot increase his yield if he has the necessary water and uses it judiciously with scientific cultivation of the soil.

In the case of irrigated farming the same precaution should be taken as that in dry farming to have the soil properly prepared. The farmer who turns on his ditch and thinks he controls the situation is mistaken. An ideal condition is one that has a firm seed bed and a fine surface giving the least possible limit of air and the highest possible limit of water. The farmer must watch all the time to keep the soil moist by keeping the surface cultivated. For instance, when the grain has been cut conserve what moisture is in the soil by cultivating and not leaving it to dry out. When it becomes dry, it becomes dormant.

Alfalfa is a crop that we are just beginning to learn the value of. We can grow a little of it without irrigation, but four or five times as much with irrigation. Work the surface for alfalfa. Cultivate the surface after the crop has been cut.

Mr. PETERSON.—How do you manage to cultivate the wheat stubble before the stacks are removed?

Mr. CAMPBELL.—The plan we follow is to follow the harvester with the discs. It is important to have the ground firm where the seed is deposited.

Mr. DENNIS.—I understand Mr. Campbell, so as to make the matter perfectly clear, that your contention is that in districts where irrigation is impossible, by following the method of intensive cultivation advocated by you, crops can be materially increased, but that you claim where it is possible for a man to irrigate his farm, that he is in the position to supply the moisture that the man who has a dry farm is not in a position to supply, and that having the moisture, if he will still follow your method he will increase his yield so much more.

Mr. CAMPBELL.—Yes, that is the point.

Mr. DENNIS.—I am very glad to have you answer the question so directly, that by following your intensive method of cultivation the irrigator can still improve the quantity and quality of his crop.

Mr. CAMPBELL.—Let me add a little to that and make the matter more clear to you why I object to being called "Dry Farm" Campbell. Just recently I visited a section of Illinois and while there I addressed probably twenty of the corn growers of that locality. This town is in the south eastern part of the State. Among those present were two men who became very much interested in the method of cultivation advocated by me. In that section of the country they had upwards of forty inches of rainfall. One of these gentlemen owns probably the largest farm in that locality and as a result of my address he put into operation the principle advocated by me, with the result that his yield has been very much greater than that obtained by the rest of them.

Mr. LANE.—You say you cultivate alfalfa after you cut it. In what way?

Mr. CAMPBELL.—The best plan is to disc one way and harrow the other way; anything to break open the surface and admit the air.

Mr. LANE.—Do you do that immediately after you cut it?

Mr. CAMPBELL.—Yes. Of course the cultivation of grain depends upon its condition, but if it has been settled by the snows, or by irrigating, or by rains, then it is necessary to follow it up.

Mr. BRUCE.—How deep would you disc alfalfa?

Mr. CAMPBELL.—About 1½ in. to 2 in., then take the harrow across it.

Mr. BRUCE.—When the soil is dry and too loose, what is the best method of firming it?

Mr. CAMPBELL.—We have what is called a surface packer. It is a machine with

wheels about twenty inches in diameter. Next to that is a small harrow with lots of horses. The horses do the work.

Mr. PETERSON.—What about the action of traction engines on the soil?

Mr. CAMPBELL.—The majority of them should pack firm enough.

Mr. PETERSON.—I understand that summer fallowing is an absolutely essential feature of your system. At what point are you prepared to say that crops can be grown annually? How much rainfall? You know the conditions of Southern Alberta. Is there any portion of Southern Alberta where you could produce crops year after year?

Mr. CAMPBELL.—It is a question whether it could be done. If the seasons were equally divided and you had none of your unusual conditions it would be quite a different problem.

Mr. PILLING.—I would like to bring up the subject of seeding as between the double disc. I believe there is considerable difference. I would like to have your opinion.

Mr. CAMPBELL.—When you draw a line between a certain drill it is like drawing a line between a certain plow. I am prejudiced in favour of the double disc.

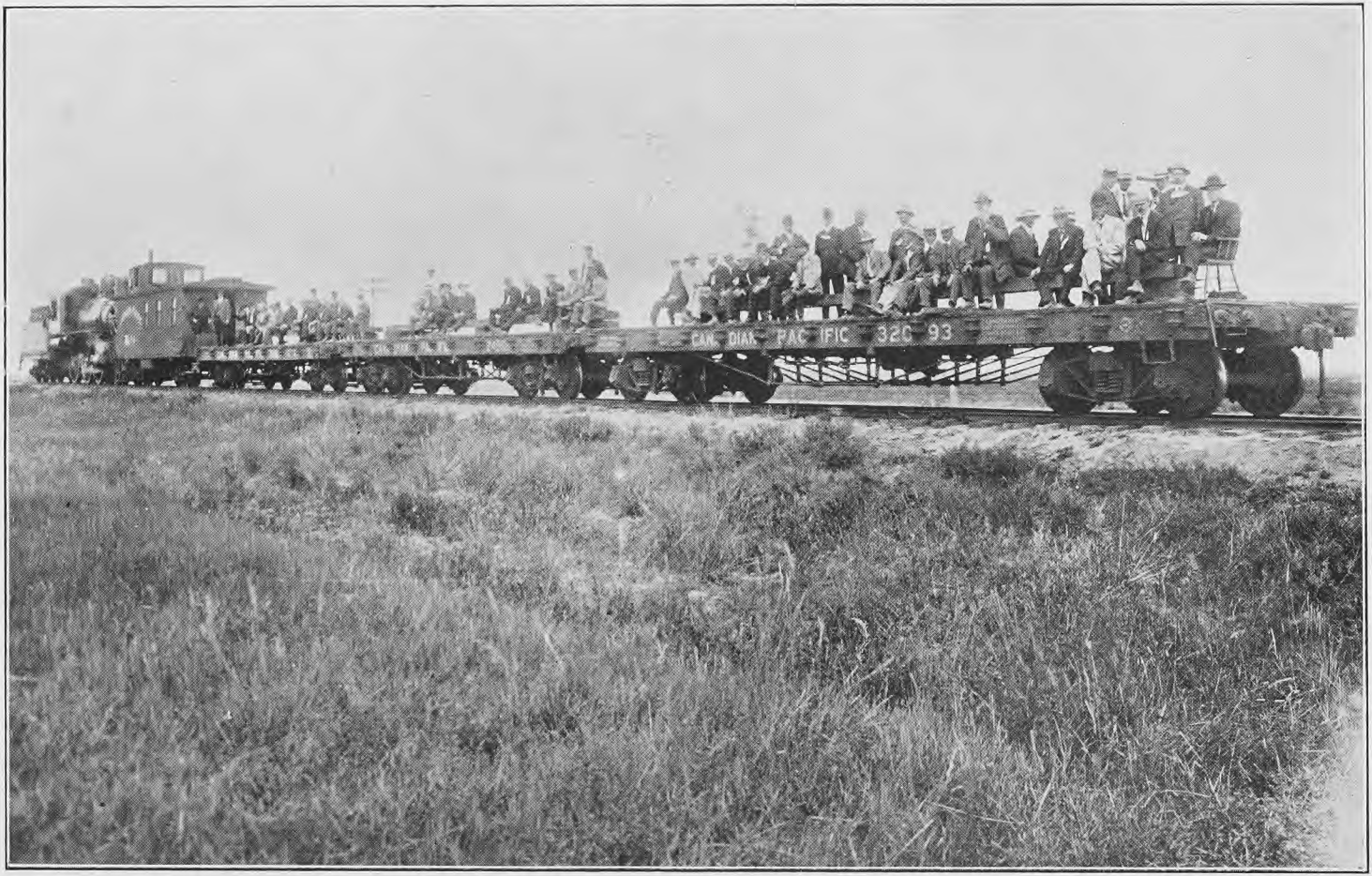
Mr. PILLING.—Are you in favour of deep seeding or shallow?

Mr. CAMPBELL.—Neither. If your seed bed is in good condition and you can get your seed just half an inch into it, the nearer the surface you can get it and yet put it into solid ground, the quicker will it germinate and the more rapidly will you get a growth.

Mr. DENNIS.—I am sure that we have all listened with a vast amount of pleasure to Mr. Campbell's address and to the answers which he has given. The subject is such a big one that it is sufficient almost to induce us all to become farmers. I have much pleasure Mr. Chairman in moving a cordial vote of thanks to Mr. Campbell.

Mr. PETERSON.—I would like to have the pleasure of seconding this vote of thanks. I am sure it has been a great pleasure to us all to listen to Mr. Campbell's very able address. Vote of thanks carried unanimously.

As the Lethbridge Board of Trade had invited the convention to a small excursion on Friday morning, the session was adjourned to Friday afternoon and the delegates were notified to be at the C.P.R. station at 10 in the morning.



Delegates on Observation Train at Lethbridge, Aug. 6, 1909.

Delegates at Lunch at farm of Mr. D. J. Whitney, Aug. 6, 1909.

FRIDAY MORNING.

The delegates assembled at the C.P.R. station where the Board of Trade had a special train of observation cars waiting. They first proceeded out on to the big C.P.R. bridge here which was just being completed. This bridge is one of the wonders of the world, being three hundred and seven feet high and one mile and forty feet long. After viewing this immense structure the train proceeded to the Dominion Government Experimental farm, which is located just outside the city limits. Here Prof. Fairfield showed the delegates some of the wonders that could be accomplished by a practical irrigationist. From here the train proceeded to the farm of Mr. D. J. Whitney, where was seen a magnificent field of alfalfa grown under irrigation, one of the many fields of the district; here also were seen small fruits and vegetables of all kinds being grown on a commercial basis, a five-acre patch of strawberries and a two-acre patch of raspberries being especially noticed. Luncheon was served on Mr. Whitney's fine lawn, when the raspberries were found to taste as good as they looked. The return was then made to the city and at one thirty p.m.

FRIDAY AFTERNOON.

The afternoon session was commenced by the consideration and discussion of the remaining resolutions as follows:

RESOLUTION NO. 7.

Moved by Mr. Tregillus, seconded by R. W. Pilling.

'That in view of the growing importance of irrigation and the enormous investment in irrigated lands, it is the opinion of this convention, that the Agricultural College of the Province of Alberta should be located at a point where the necessary area of irrigable lands can be included in the college farm in order that instruction may be given students in the practise and theory of the artificial application of water to crops.'

Mr. TREGILLUS.

This resolution speaks very eloquently for itself. We have in this province an immense area of irrigable land, an ample water supply, and enormous sums have been expended and the very best engineering talent has been employed to establish the best and largest irrigation schemes on this continent. Thousands of people are going to live on these lands, and most of these incoming settlers are people who have come from other than irrigated belts. We are the cause of their coming here, and we should try to provide every possible means for the education of those who will at once engage in irrigated farming. People who live on irrigated lands remain there contented and prosperous while the element of risk is eliminated. The settlers who come to these irrigated lands in Alberta are not educated in irrigation and need education on this subject. Any agricultural college that is established without having facilities for training in this branch of knowledge will be sadly lacking in its equipment to do its whole duty.

It is in the interest of everyone in Alberta, for it is patent to all, that the consumer treads very closely on the heels of the producer and their relations are very closely bound together. Irrigation will help very much in advanced farming and the time is past when anyone can be a farmer whether he has education or not. Agriculture as it is today gives full scope for the brainiest men and the cleverest men.

There is nothing better for a community than compact communities such as are in irrigated districts where the people can enjoy every modern convenience and

pleasure. It is the duty of citizens to help build up such communities. It is thus seen that the larger interests of the province will be furthered by giving the people a chance to get education in farming by irrigation at an agricultural college. I sincerely trust that this resolution will have your unanimous acceptance.

Mr. PILLING.

It is somewhat of an experience to me to be called upon to second this resolution. I believe it is the most important resolution that we have taken up in this convention. There are many thing to be looked at from a farming standpoint. At one time farming was looked upon as a mere job and to be a farmer was to be looked down upon by the general public, but today the tilling of the soil has become a profession. I think it is of great importance that we should have an agricultural college at a point where our young men could be able to obtain the greatest results. I think it is very important that this college should be independent from any university or any other college. It should be strictly an agricultural college to train our young men in the best methods of farming. I take pleasure in seconding this resolution and I trust the time will soon be here when I will be able to attend that college.

Mr. HALL.

I am afraid that I cannot add anything to what has already been said. It is very important that this institution should be established. We should give the same attention to education along the lines of agriculture as we do along any other educational lines. We cannot have too many educational institutions in this young and growing province; in fact all of the future depends upon the action of the present.—Resolution carried.

Resolution No. 8.

Moved by R. H. Rogers. Seconded by T. Galloway.

'That in the opinion of this convention speedy steps should be taken by the 'Government of British Columbia towards the establishment of a Provincial Agri-'cultural College wherein practical instruction in the proper methods of applying 'water shall be given.'

Mr. Rogers.—After the very able and forcible remarks made by Mr. Tregillus regarding the proposed Agricultural College for the province of Alberta, it seems to me that there is very little left for me to say, except to follow up the arguments used by these gentlemen in the case of British Columbia. You are aware that the lands in British Columbia are somewhat limited in extent. The land in the fertile valleys costs in its raw state from $100 to $200 an acre, and as the farms as a rule do not contain more than ten acres, the farming must necessarily be intensive. The farmer therefore needs the best of technical training in order to make the best of his opportunities. Fruit raising and irrigation are very important factors there, and an agricultural college would assist very much, as has been mentioned in the discussion on the college in Alberta in educating the new people coming in. I have therefore very much pleasure in moving this resolution and I hope it will meet with the support of the convention, and I sincerely hope that our Government will take the matter into consideration.

Mr. Galloway.—As and old educationalist myself I thoroughly recognize the importance of this resolution. I understand the British Columbia Government are considering the question of the establishment of such a college, and I believe as there is such a large irrigable area in the province that there will be a chair for irrigation. I have much pleasure in seconding the motion.

Hon. Mr. Fulton.—I might say as a member of the Government of British Columbia that this matter has been under consideration for the last year or so, but we have

not seen our way clear to finally determine the matter, as there are other questions to be taken into consideration besides the mere establishment of such an institution, but I can assure our delegates from British Columbia, that the Government has not its eyes shut to this question and I only hope that at some early date we will be able to do something along the lines suggested. Resolution carried.

Mr. Dennis read the following letter from the City of Kamloops regarding the next meeting of the convention:

KAMLOOPS, B.C., August 2, 1909.

J. S. DENNIS, Esq.,
President Western Canada Irrigation Association.

Dear Sir,—On behalf of the Municipal Council of the City of Kamloops, I beg to extend to your Association a cordial invitation to hold the convention of 1910 at Kamloops.

Yours truly,

J. J. CARMENT,
City Clerk.

The chairman then called upon Mr. A. M. Grace, Chief Engineer of the Southern Alberta Land Company to address the convention on the work that was being done by his company, remarking that it would rank amongst the great irrigation works of the world.

MR. GRACE.

It is three years since the operations were started in carrying out the project of the company, in supplying water to an area of four hundred thousand acres of land. The work is very difficult because of the fact that the rivers flow about three hundred feet below the level of the land. Several schemes had been thought out and they had finally decided upon the one now being put into effect.

Mr. Grace then produced a map showing the location of the system. The intake where they are putting in a great concrete dam and intake with steel grates is on the Bow river twenty five miles south west of Gleichen. The intake is made to take in 1,100 cubic feet per second. The first three miles of the ditch was easy construction, but for the next mile and a half they had to make an enormous cutting which will cost $300,000. The ditch then goes across the Blackfoot Reserve to the Queenstown country and the Snake Valley. They are building an earth dam at each end of Snake Valley and will make there a vast lake to be known as Lake MacGregor, after the Managing Director of the company. The lake will be twenty miles long and from a mile to two and a half miles wide and thirty-five feet deep. Its capacity will be 360,000 acre feet or enough water to cover 360,000 acres a foot deep. This supply alone added to the average rainfall of the district of fourteen inches would give twenty six inches of water to the area mentioned.

The canal follows the Littlebow river, the banks of which are very high and steep, eight miles to the benches, then goes on twenty five miles east to their first tract of land which is north of Taber. It contains 180,000 acres of land which is very much like, and fully as good as, the land around Coaldale.

Leaving this tract the flow of irrigation water has to be taken across the Bow river, which is a very difficult engineering feat. The banks are 180 feet high and a siphon two miles long has to be built to carry the water across.

The next tract which contains 125,000 acres is reached and is a very beautiful piece of land. The main ditches run along the highest land and irrigate both ways.

Here there is another place for a reservoir and from it the ditches bring the water within six miles of Medicine Hat, where they have a tract of 80,000 acres of land, which with plenty of water will grow the finest crops that can be raised anywhere.

The company has land in the very centre of the gas area in which the C.P.R. have struck the "Old Glory" well.

It is the purpose of the company to sink wells and use the gas for power to run an electric railroad from Calgary to Medicine Hat, with a branch to Lethbridge.

Mr. Grace said that he expected that the whole system would be completed in three years. They had with the great reservoir one of the finest systems in the world. He invited the convention to meet in Medicine Hat in 1911 when he hoped to show them a part of the finest irrigation system on the continent.

CHAIRMAN'S CLOSING ADDRESS.

In closing the convention of the Western Canada Irrigation Association over which he presided as chairman Mr. Bennett spoke of the value of such conventions in influencing public opinion and also the opinion of those who were in authority. He also spoke of their value in that they got men together from different parts of the country and they got to know other parts better. He spoke eloquently of the great natural resources of British Columbia, which he was prepared to admit, were the greatest of any province in Canada. He then dilated upon the wealth stored up in the province of Alberta, and stated that he looked forward to Lethbridge being the second city in Alberta in twelve or fifteen years. This statement was based on the evidence of history. Where one sees collieries clustered, there will always be found a very large and wealthy city and evrything points to a great future for Lethbridge.

ELECTION OF OFFICERS.

The election of officers was then proceeded with and resulted as follows:

Honorary President: His Honour Lieutenant Governor Dunsmuir of British Columbia.

President: Hon. F. J. Fulton, Kamloops, B.C.

First Vice-President: J. S. Dennis, Calgary.

Second Vice-President: A. M. Grace, C.E., Southern Alberta Land Co.

Treasurer: C. W. Hallamore, Manager, Bank of Commerce, Kamloops, B.C.

Executive Committee: W. C. Ricardo, R. B. Bennett, W. H. Fairfield, J. T. Robinson, E. B. Knight, A. E. Meighen, C. W. Peterson.

According to the resolution passed by the convention a permanent secretary will be appointed by the Executive Committee.

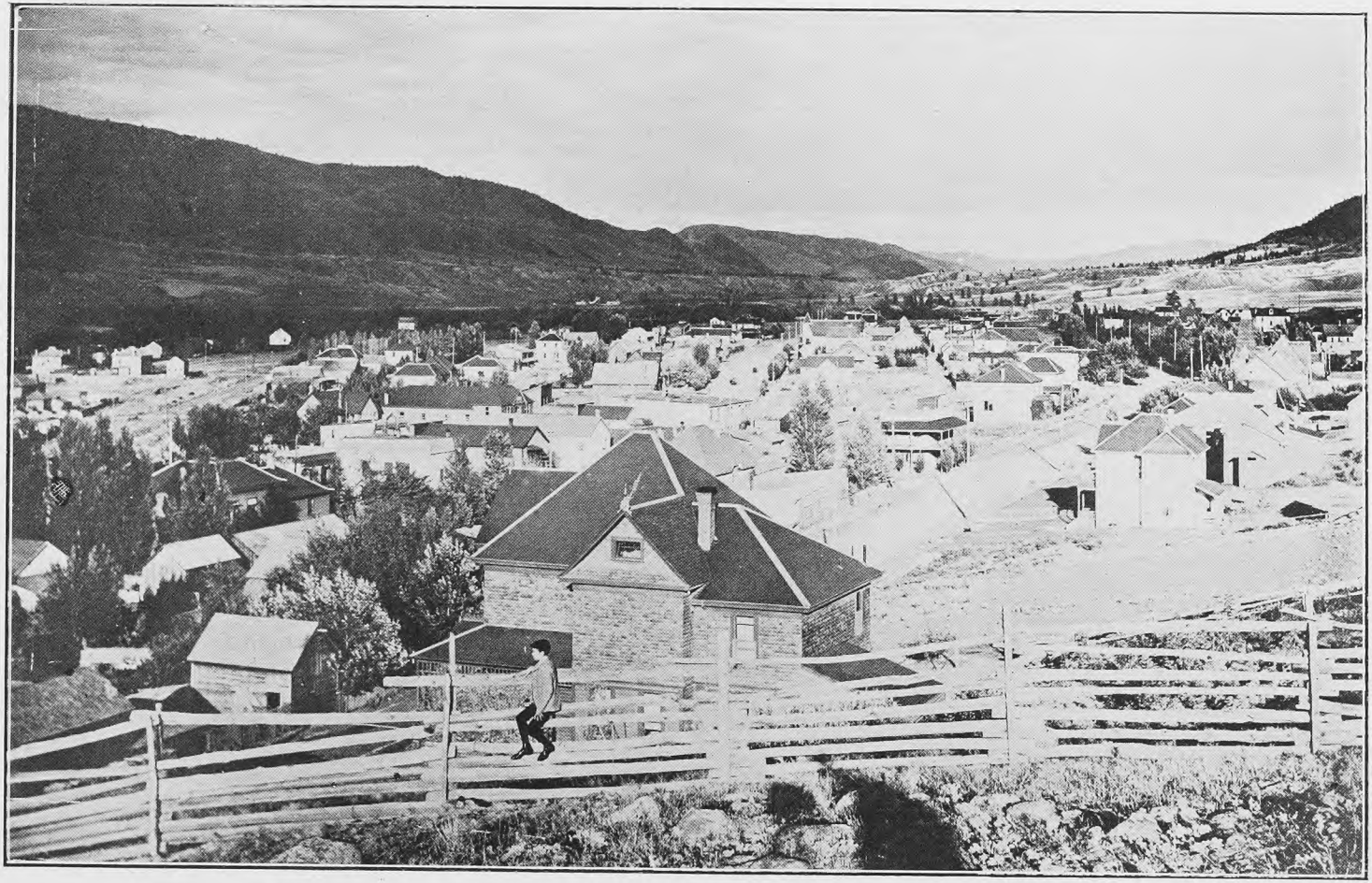
Votes of thanks were passed to the Press, the Dominion Government and the Provincial Government, The Mayor and City of Lethbridge, The Board of Trade, the management of the Experimental Farm, Mr. D. J. Whitney and to the Chairman.

In the course of brief speeches made here there were frequent and pleasant references to Lethbridge and the district, commenting on the rapid growth and development shown.

J. T. Hall in moving a vote of thanks to the Dominion Government for publishing the report of the last convention paid a compliment to the Printing Bureau and to the Department of the Interior. The records sent down to be printed were lost in the mails. Mr. Hall got a copy of the proceedings as published by a Vancouver paper and sent them down only a month ago, and yet the Printing Bureau had the printed minutes back for the convention. He thought that those concerned deserved credit for the work.

Kamloops, British Columbia, was chosen as the next place of meeting.

The National Anthem was sung and the convention adjourned *sine die.*



A glimpse of Kamloops, B.C.

Field of Alfalfa near Lethbridge.

Extract of letter from Mr. C. W. Peterson to Mr. W. H. Fairfield.

CALGARY, Sept. 3, 1909.

W. H. FAIRFIELD, Esq.,
Lethbridge, Alberta.

DEAR MR. FAIRFIELD,—I am duly in receipt of your letters addressed to Mr. Dennis and myself in regard to the secretaryship of the Western Canada Irrigation Association. I am fully in accord with your proposal.

Under the circumstances, I would have very much pleasure in moving the resolution, which will be seconded by Mr. Dennis, to the effect that the services of Mr. John T. Hall, of Medicine Hat, be secured for the position of permanent secretary, the matter of remuneration to be left until the next annual convention, when the committee should meet and arrange the matter.

I am sending a copy of this letter to the various members of the committee and have asked them to kindly communicate to you their votes on this resolution. There is no reason why this matter should not be decided by mail and if you receive a majority of votes for Mr. Hall, he could be installed at once.

Certainly no time should be lost to get a secretary appointed and to have action taken on the various resolutions dealt with at the last convention.

Yours very truly,

(Signed) CHAS W. PETERSON.

LETHBRIDGE, Sept. 13, 1909.

JOHN T. HALL, Esq.,
Com. Board of Trade,
Medicine Hat, Alberta.

Dear Mr. HALL,—I am in receipt of a letter from C. W. Peterson, under date of September 3rd. a copy of which I am enclosing for your information, and I am pleased to say that I have received word from Messrs. J. S. Dennis, A. M. Grace, C. W. Hallamore W. C. Ricardo, R. B. Bennett, J. T. Robinson and A. E. Meighen stating that they wish to support the formal motion of Mr. Peterson and you are therefore appointed to the position of permanent secretary of the Western Canada Irrigation Association.

We are bringing all the pressure to bear that we can on the official stenographer and are expecting to receive daily the balance of his transcribed notes. When we do we will forward the same to you promptly. Until we get these I do not know that there is anything more that we can do in regard to the business of the Association.

I would like to take this opportunitay of expressing my pleasure over the fact of your appointment to the permanent secretaryship for I feel that the Association will accomplish much good under your management.

Very sincerely,

(Signed) W. H. FAIRFIELD.

MEDICINE HAT, September 29, 1909.

Dear Sir,—I have just received notice from Mr. W. H. Fairfield of my appointment as permanent secretary to the Western Canada Irrigation Association by a unanimous vote of the officers and the Executive and I desire to thank you personally for the confidence reposed in me in placing me in this responsible position and it will be my earnest endeavour to conduct and carry on the work of the association in such a manner as to merit your approval and to build up an organization that will be no small factor in the future development of Western Canada.

Again thanking you,

I beg to remain,

Yours respectfully,

JOHN T. HALL.

To the Officers and Members of the Western Canada Irrigation Association.

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